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Training needs assessment among Palestinian pharmacists in West Bank

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Declaration

I certify that the thesis submitted for the degree of masters, is the result of my own research, except where otherwise acknowledged and that this thesis – or any part of the same material – has not been submitted for a higher degree to any other university or institution.

Signature:…….

Abeer Ali Mohammed Ghanayem

Date: April 20th , 2016

Dedication

To my beloved husband…. Mohammad…

My precious kids……Rama

Ahmad

Ali

& Talia

To my parents…..

To my friends…..

For all those times you stood by me…

For every dream you made come true…

For all the love and encouragement that carried me through….

I'll be forever thankful

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Abstract

Background: Pharmacy is the health profession that is committed to ensure the safe and effective use of medication (Abu Arah, 2012). Pharmacy organizations and academic training programs have promoted pharmaceutical care in pharmacy profession to ensure that a patient achieves positive outcomes from drug therapy (Azhar *et al*, 2009). Continuing education is essential to update knowledge for graduated pharmacists. Unfortunately, continuing education, training programs are not available in Palestine (Sweileh, 2013). Health Human Resources should imply on policy makers to meet population health needs, and so, people would receive the optimal health care that pharmacists can provide (Manmohan, 2013). Training needs assessment and competency assessment are cornerstone steps to improve pharmacy practice in Palestine. Continuous education program is fundamental to activate pharmacist's role in the community and improve health outcomes.

Aim: to assess the training needs, knowledge and skills among Palestinian pharmacists who work and live in West Bank.

Methods: A quantitative cross sectional study design was used. Data collection was through self-administered questionnaire. The study covered all nine governorates in West Bank. Study sample was proportional stratified random sample among Palestinian pharmacists working in governmental health facilities (hospitals and PHC's) or community pharmacies.

Findings: The overall response rate was 80%. Female participants were 59.4%, The majority of respondents held bachelor degrees (83.3%) while 9.3% held master degrees. Pharmacists working in governmental hospitals and healthcare facilities formed 28.1% of the participants. Internet sources were the most chosen source of pharmaceutical information by 83.6% of participants while 74.8% chose drug information as required area for training.

Pharmacists rated high level of skills; (mean = 3.98 ± 0.44). A multiple regression was run to predict skills from participants' characteristics. Both practice field and workplace location (governorate) statistically significantly predicted skills, (F(2,374)= 51.140, P<0.001, R^2 =0.215). The two variables were added statistically significantly to the prediction, (P <0.001). On average, pharmacists working in community pharmacies reported better skills than those working in governmental health facilities (P < 0.001). Pharmacists working in Ramallah reported the best skills while pharmacists working in Jerusalem reported the weakest skills at (P =0.005). No significant differences were observed in relation to participants' age, gender, educational degree, years of experience, pharmacy education language or country of pharmacy education (P > 0.05).

In general, knowledge scores of participants were good (mean = 73.7% ± 20.0). The majority (87%) of the participants achieved more than 50% of correct scores.

Multiple regression was run to predict knowledge scores from participants' characteristics. Gender, educational qualifications, practice field and workplace location statistically significantly predicted knowledge, (F (4,370) = 31.947, P < 0.001, R^2 = 0.257). All four variables added statistically significantly to the prediction, (P < 0.001). On average, females respondents rated better knowledge scores than males at (P < 0.05). Pharmacists

carrying master degree rated better knowledge scores than pharmacists carrying B.Sc. in pharmacy or Pharm D degrees at ($P < 0.001$). Pharmacists working in governmental health facilities rated better knowledge scores than those working in private pharmacies at ($P < 0.001$). Pharmacists working in Jericho rated the best knowledge scores, while pharmacists working in Nablus rated the least knowledge scores at ($P < 0.001$). Respondents' age, pharmacy education language, years of experience and country of education were not associated with neither knowledge scores nor skills scores ($P > 0.05$).

Conclusions: The results of the study indicated that Palestinian pharmacists' competencies should be improved. Detection of areas of training, establishment of continuous education program and setting standards for entry to practice are some suggestions for development of pharmacy practice in West Bank.

تقييم احتياجات الصيادلة للتدريب والتعليم المستمر في الضفة الغربية

إعداد: عبير علي محمد غنايم

إشراف: د. معتصم حمدان

ملخص الدراسة:

تعد الصيدلة المهنة الصحية التي تهتم بضمان الاستخدام الآمن والفعال للأدوية (أبو عارة، 2012). قامت نقابة الصيادلة ووزارة الصحة بطرح مبدأ الرعاية الصيدلانية بهدف تحقيق أكبر فائدة من العلاج الدوائي للمرضى (الأزهر وآخرون، 2009). يعد التعليم المستمر في مرحلة ما بعد التخرج ضرورة لتطوير كفاءة الصيادلة. للأسف، برامج التدريب الصيدلاني قليلة في فلسطين (صويلح، 2013). على صانعي القرار و دائرة الموارد البشرية الصحية تفعيل برنامج التعليم الصيدلاني المستمر و ذلك لتلبية الاحتياجات الصحية للمجتمع (مانموهان ، 2013). يعتبر تقييم احتياجات الصيادلة للتدريب والتعليم المستمر و تقييم كفاءتهم حجر الأساس في منظومة تحسين مستوى الرعاية الصيدلانية في فلسطين.

الهدف: تقييم احتياجات الصيادلة للتدريب و التعليم المستمر و تقييم مهاراتهم و معلوماتهم الصيدلانية.

المنهجية: اعتمدت الدراسة الوصف التحليلي من خلال دراسة مقطعية حيث تم جمع البيانات بواسطة الاستبانة. غطت الدراسة جميع محافظات الضفة الغربية. اعتمدت الدراسة العينة العشوائية الطبقية النسبية بين الصيادلة الفلسطينيين العاملين في المرافق الحكومية الصحية (المستشفيات و في مراكز الرعاية الصحية الأولية) أو صيدليات المجتمع.

النتائج: بلغت نسبة الاستجابة للدراسة 80٪ . حيث كانت نسبة المشاركة من الاناث 59.4٪. كانت غالبية المشاركين في الدراسة من حملة شهادة البكالوريوس في الصيدلة (83.3٪)، في حين أن 9.3٪ يحملون شهادة الماجستير. بلغت نسبة الصيادلة العاملين في المستشفيات الحكومية ومرافق الرعاية الصحية 28.1٪. كانت مصادر الإنترنت المصدر الأكثر اختياراً للمعلومات الدوائية بنسبة 83.6٪ من المشاركين.

أظهرت الدراسة أن مستوى الصيادلة عال من حيث المهارات الصيدلانية؛ (المتوسط الحسابي = 3.98 ± 0.44). كما أظهرت الدراسة أيضا فروقات ذات دلالة احصائية للتنبؤ بالمهارات الصيدلانية من حيث جهة العمل الرسمية والمحافظة التي يعمل فيها الصيدلي المشارك بالدراسة.

أظهرت الدراسة أن الصيادلة العاملين في صيدليات المجتمع يمارسون مهارات صيدلانية أفضل من أولئك الذين يعملون في المرافق الصحية الحكومية (P< 0.001). كما وضحت أن الصيادلة العاملين في محافظة رام الله هم الأفضل من ناحية المهارات (P = 0.005). لوحظ عدم وجود اختلافات كبيرة فيما يتعلق بأعمار المشاركين والجنس والمستوى التعليمي وسنوات الخبرة و لغة دراسة الصيدلة أو بلد دراسة الصيدلي (P>0.05).

بشكل عام، تم تقييم المعرفة الصيدلانية للمشاركين بالجيدة (الوسط الحسابي = 73.7٪ ± 20.0). كما أظهرت الدراسة أيضا فروقات ذات دلالة احصائية للتنبؤ بالمعرفة الصيدلانية من حيث الجنس، والمؤهلات التعليمية، جهة العمل الرسمية والمحافظة التي يعمل فيها الصيدلي المشارك بالدراسة. في المتوسط، أظهرت الدراسة أن الإناث أفضل من الذكور من ناحية المعرفة الصيدلانية (P<0.05). كما أثبتت الدراسة أن الصيادلة حملة درجة الماجستير أفضل من ناحية المعرفة الصيدلانية من حملة درجة البكالوريوس في الصيدلة أو Pharm D (P< 0.001). حقق الصيادلة العاملين في المرافق الصحية الحكومية نتائج أفضل من أولئك الذين يعملون في صيدليات المجتمع (P< 0.001). أشارت النتائج أن الصيادلة العاملين في أريحا هم الأفضل من ناحية المعرفة الصيدلانية (P< 0.001) . وقد

لوحظ عدم وجود اختلافات كبيرة فيما يتعلق بأعمار المشاركين و سنوات الخبرة، و لغة دراسة الصيدلة أو بلد دراسة الصيدلي ($P>0.05$).

الخلاصة: تشير نتائج الدراسة إلى أنه يجب تحسين كفاءات الصيادلة الفلسطينيين و العمل على إنشاء برنامج التعليم المستمر لضمان تطوير مهاراتهم. كما يجب وضع معايير لممارسة مهنة الصيدلة. تقدم الدراسة بعض الاقتراحات لتطوير الممارسات الصيدلانية في الضفة الغربية.

Table of Contents Page

List of Figures

List of Tables

List of abbreviations

WHO	World Health Organization
PPA	Palestinian Pharmaceutical Association
MoH	Ministry of Health
FIP	International Pharmaceutical Federation
USAID	United States Agency for International Development
PSI	Palestinian Standards Institution
GbCF v1	Global Competency Framework version 1
OTC Drugs	Over The Counter Drugs
MSOP	Model Standards of Practice for Canadian Pharmacists
B.Sc. in Pharmacy	Bachelor of Pharmacy
MMS	Medical Military Services
NGO's	Non Governmental Organizations
PhD	Doctor of Philophosy
SPSS	Statistical Package for the Social Sciences

List of Annexes

Chapter One

Introduction

1.1 Background

Pharmacy is the health profession that is concerned in safe and effective use of medications. Pharmacists' professional roles and responsibilities have evolved historically from a focus on medication compounding and dispensing to extended pharmaceutical care services. The paradigm shift of pharmacy practice took turn in 1990, when Hepler and Strand introduced the term "pharmaceutical care" (Hudson, 2007).

The term 'Pharmaceutical care" was then modified by the International Pharmaceutical Federation (FIP) in 1998 to become “Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life” (WHO & FIP, 2006, p. xi).

Over the last few decades, pharmacy organizations and academic training programs around the world have promoted pharmaceutical care as a standard for provision of care for patients (WHO & FIP, 2006). The pharmaceutical care concept has transformed the pharmacy profession to be more accountable in patient care, especially to ensure that a patient achieves positive outcomes from drug therapy (Azhar *et al*., 2009). Many factors have affected the role of pharmacist: the increase in health demand, presence of wide-complex range of chronic medicines and poor patient commitment to prescribed medicines which have forced pharmacists to undertake a patient-centered approach (Okpalanma *et al.*, 2013).

The International Pharmacy Federation (FIP) has stated that, "Maintaining competence throughout a career during which new and challenging professional responsibilities will be encountered is a fundamental ethical requirement for all health professionals" (FIP, 2002, p.1). Also stated that, "Patients have a right to be confident that professionals providing health care remain competent throughout their working lives" (FIP, 2002 p.2).

Continuing education in addition to continuing professional development programs for health professionals are based on introducing well-designed organized learning experiences and activities that aim to develop knowledge, skills and attitudes necessary to maintain health professional proficiency, improve the quality of services and respond to patient needs (WHO, 2006). Therefore, continuing education is essential to update pharmacist's competencies. Unfortunately, Palestinian training programs are not adequate enough to meet pharmacist's needs.

1.2 Problem Statement and Significance

Community pharmacists are the most accessible health care professionals to patients. In Palestine, pharmacists play an important role in public and community health issues (Khdour & Hallak, 2012). In addition to their traditional role of dispensing medications and treating minor ailments, community pharmacists are considered as an immediate source of drug information for the public. For these reasons, community pharmacist must possess sufficient medication knowledge and proper skills to optimize pharmaceutical care and beneficial from medications for the patients (Abu Arah, 2012).

According to WHO, pharmacists' services and involvement in patient-centered care have improved the quality of life, fostered health and economic outcomes, and reduced

morbidity and mortality. This was possible through gradual expansion of pharmacist's traditional roles and in active collaboration with other health professionals in health workforce to solve medicine-related problems. Pharmacists need to enhance their knowledge, skills and attitudes in order to correlate traditional pharmaceutical science they possess with clinical aspects of patient care, clinical skills, management and communication skills (WHO, 2006).

Human resources management in any organization targets best possible achievement of goals through development of policies, integrating procedures and management practices to upgrade employees performance. It is important to create a working environment that motivate staff and improve their skills to achieve the highest possible level of performance over time (USAID, 2005). Training is one of the major categories in human resources management. In other words, health professionals education and training is essential to parallel the health system and population needs.

Training needs assessment is the process to collect data about areas to be addressed and developed to meet the required performance of individuals and fulfill the organizational current and future requirements. Training needs assessment is essential to determine what knowledge or skills should training programs address to improve individual's performance (Miller & Osinski, 2002).

According to Palestinian Pharmaceutical Association and Ministry of Health records and up to the time this study was performed, there are 4745 registered pharmacists and 979 community pharmacies in West Bank (PPA, 2015). The majority of those pharmacists work in the private sector particularly in community pharmacies. The absence of continuing education for pharmacists is negatively affecting the level of medication knowledge in addition to professional skills; and consequently, weakening the quality of

pharmaceutical care services delivered in community pharmacies (Abu Arah, 2012; Khdour & Hallak, 2012; Jaradat & Sweileh, 2003; Sweileh 2004).

For example, one cross-sectional study was conducted by Sweileh (2004) in community pharmacies in the northern region of Palestine to describe and analyze the self medication patterns and over-the-counter practices in Palestine. A random sample consisted of 2087 patients seeking self medication at community pharmacies. Data was collected by interviewing patients using a constructed 15-item questionnaire during the study period of three months. The findings showed that 60% of the patients, were seeking self medication, purchased a total number of 2091 drugs upon self selection or pharmacist's recommendations. Thus, gave an average of approximately 1.5 medications per patient. The study justified such behavior and results to lack of health awareness among the population and lack of medical continuing education among community pharmacists (Sweileh, 2004). This was supported by another cross sectional study that was conducted by Abu Arah (2012) in Palestine to assess knowledge of community pharmacists about safety of medicines during pregnancy and evidence based therapy of herbal products. The sample consisted of 342 pharmacists. Data was collected by self-administered questionnaires. The findings showed insufficient competence in providing information about safety of medications during pregnancy among community pharmacists. The study justified such results to lack of knowledge in certain aspects of pharmacy practice such as, evidence based indication of herbal products, herbal-drug interactions and medication safety during pregnancy. This study concluded that the government, universities and pharmaceutical association should provide community pharmacists with continuous and up-to-date medication knowledge to improve patient counseling. The study recommended establishment of pharmacy continuing education center and make such education mandatory for re-licensure in Palestine (Abu Arah, 2012).

In 1997, Palestinian Pharmaceutical Association had introduced continuing education program as a potential project in the General Assembly meeting. The program was well-prepared, with specific features and details. The program was suggested to be obligatory for annual pharmacy licensure renewal. Unfortunately, voting was against the project and, consequently, rejected. Since then, no attempts had been noticed to re-activate the project. Nowadays, the current PPA head board is supporting training and development of pharmacists. Their main target is to upgrade pharmacy profession and activate pharmacists' roles and services in the community. PPA head board would support evidence based needs of training of registered pharmacists. Continuing education program is present in their current agenda with strong intentions to implement the project.

In Palestine, the Ministry of Health implements periodic seminars and workshops to improve governmental pharmacists' competencies. Palestinian Pharmaceutical Association has recently launched training and continuing education program that involves both pharmacists and pharmacy students. Training needs assessment is fundamental to compose a successful training program (Brown, 2002).

Many efforts are spent in various countries to update, train and improve health services provided by pharmacist in order to increase health promotion and decrease the economic impact of health ignorance in the community.

The results of the study might help policy makers and human resources department in Palestinian Ministry of Health and Palestinian Pharmaceutical Association. In other words, all parties may adopt training and development programs that address the actual needs of registered pharmacists to develop and maintain competence, and enhance pharmaceutical professional practice.

1.3 Justification of the Study

As stated formerly, pharmacists have the responsibility to ensure safe, effectient and rational use of medications. World Health Organization declarations concerning the role of pharmacist advocated changes in pharmaceutical healthcare to become customer oriented rather than dispenser of medications. This has put pharmacists in challenge to improve pharmacy practice especially through training and continuous education (WHO & FIP, 2006).

Health human resources emphasize that the performance and the benefits that the health system can deliver depend largely on the knowledge, skills and motivation of health workforce (WHO, 2000). Workforce training is essential to ensure readiness to meet a particular country's present and future needs. A well-trained and competent workforce is crucial to any successful health care system (Kabene, 2006).

This study was performed to assess training needs of pharmacists working in community pharmacies, governmental hospitals and healthcare centers in West Bank area.

Up to the researcher's knowledge there is lack of studies that are conducted to assess the training and development needs among pharmacists registered in Palestinian Ministry of Health (Abu Arah, 2012; Khdour and Hallak, 2012; Jaradat & Sweileh, 2003). Literature review contains only one study that assessed the community pharmacist's medication study (Abu Arah, 2012).

1.4 Aim and Objectives of the Study

1.4.1 Main aim of the study:

This study aims to assess training needs among licensed Palestinian pharmacists in the West Bank.

1.4.2 General Objectives:

1. To examine pharmacists' existing knowledge and skills.
2. To examine variations in the competences (knowledge and skills) in relation to different characteristics of pharmacists.

1.5 Research Questions

- Are there any differences in pharmacist's competences in relation to their different characteristics?
- What training fields should be implemented to improve pharmacists' competence?

1.6 Study Assumptions

- Pharmacists, whether working in community pharmacies or Palestinian health facilities are cooperative and willing to provide honest, valid and reliable data that would serve the study purposes.
- Sample selected in this study is representative.
- The questionnaire used in the study will get to the heart of the research problem and thus yield valid and reliable results.

1.7 Study Limitations

- In quantitative cross-sectional studies, results are restricted to the time interval of the study. Results are dependent on conditions occurring during that time and cannot be generalized to include the past or future.
- Data collection depends on self-administered questionnaire; so the participants may be reluctant to state their points of view or they might exaggerate their answers.
- Willingness to participate in the study gave opportunity for pharmacists who studied in languages other than English to refuse participating in the study. Difficulty in understanding knowledge questions in English was the major excuse. This might have underestimated the results of the research to a certain extent.
- Lack of official list of pharmacists working in community pharmacies in Palestine. The current list that was provided by PPA included all registered pharmacists, even those who were abroad or work in fields other than pharmacy practice.

1.8 Summary

- The main aim of the study is to assess the training needs of Palestinian pharmacists registered in Ministry of Health and Palestinian Pharmaceutical Association and licensed to practice pharmacy profession in community pharmacies or governmental health facilities.
- The chapter provides an introductory overview of the study (objectives, research question, limitations and feasibility).

Chapter Two

Literature Review

2.1 Introduction

Rapid evolution in health systems and complex patient care demands are challenging pharmacists to modify their roles and services they provide to public. Pharmacists are expected to help people make the best use of their medications. In order to do this effectively and safely, pharmacists need to maintain their professional knowledge and skills throughout their career. Pharmacists are in need to develop their competencies to be acknowledged as advanced practitioners.

Competency can be described as a combination of psychomotor skills, knowledge, intellectual problem solving, attitudes, values and behaviors that an individual develops through education, training, and experience (Holland & Nimo, 1999). Improving competence would advance pharmacist's performance, enhance decision making and facilitate interaction with patients and with colleagues (Rouse, 2004). Professional competence is characterized by good problem-solving and decision making abilities, a strong knowledge base, and the ability to apply knowledge and experience among diverse patient-care situations.

Maintaining professional competence has become a lifelong ethical responsibility of all health professionals in general and for every practicing pharmacist in specific. In 1997, FIP had set Standards for Quality of Pharmaceutical Services – Good Pharmacy Practice which were approved, later, by WHO. These standards stated the following: "pharmacists in each

practice setting should accept personal responsibility for maintaining and assessing their own competence throughout their professional working lives" (FIP, 2002, p.1). This explains all efforts to preserve updated, intellectual and experiential elements of training provided by regulatory bodies in the country. The major concern is to offer the best possible professional services to the public that meet their expectation and improve the health outcomes and welfare of the society. FIP has stated that "national pharmaceutical organizations should also take action to ensure that pharmaceutical education, both pre-university and post-university qualification, is designed to equip pharmacists for the roles they have to undertake in community and hospital practice" (FIP, 2002, p.1).

In 2000, FIP had set a policy statement on Good Pharmacy Education Practice which indicates that continuing education and professional development is a lifelong obligation for every practicing pharmacist (FIP, 2002). How to measure and monitor pharmacists' competencies stays a major challenge that faces the regulators of pharmacy practice. Many agree that the best way of determining competency would be to observe people in their day-to-day practice. Unfortunately, this would be a costly procedure (Collins, 2007).

Maintenance of pharmacists' competency could be performed through several areas. Such as, collection of continuing education credits, documentation of learning activities or even mandatory performance-based assessment (Austin *et al*., 2005).

Continuing education was defined as:

> "organized learning experiences and activities in which [health care professionals] engage after they have completed entry-level academic education and training. These experiences are designed to promote the continuous development of the skills, attitudes, and knowledge needed to maintain proficiency, provide quality service or products, respond to patient needs, and keep

abreast of change." (Council on Credentialing in Pharmacy, 2001, Appendix A, http://www.medscape.com/viewarticle/406934)

Pharmacists with advanced level of competency may contribute to patient safety and efficiently manage complexity in many areas of expert practice. Professionalism would improve recognition by other colleagues in the clinical team, research, education and management (FIP, 2012).

Pharmacy profession is developing worldwide. This can be attributed to many factors; increasing complexity of pharmacist's role, with enhanced responsibilities and accountabilities for pharmaceutical care in clinical environments. This can be coupled with the professional recognition of pharmacists as a vital link among healthcare professionals. The public should expect the highest possible pharmaceutical care from professional practitioners worldwide, without exception. It is in the interest of patients, health systems and pharmacy profession to develop a common understanding of "pharmacy practice". This is a key driver for future workforce development (FIP, 2015).

Palestine is divided into two geographical separate zones; West Bank and Gaza strip. West Bank is divided into three regions that include eleven governorates. The Northern region; Jenin, Salfit, Tubas, Nablus, Tulkarem, Qalqilia, the Central region; Jerusalem, Jericho, Ramallah and the Southern region; Bethlehem and Hebron. The total population is approximately 3.826 million of which 2.4 million is in the West Bank and 1.4 million in Gaza. The average annual population growth rate is 2.8% (MoH, 2014). There are 4745 pharmacists registered in PPA files in West Bank with a density of 9.9 per 10,000 population compared with WHO's target of five pharmacists per 10,000 population (PPA, 2015). There are 979 community pharmacies in West Bank during the period of data

collection for this study. PPA regulations stated that one community pharmacy should serve 4000 citizen in order to preserve average life level for pharmacists. This ratio is inadequate when compared with WHO's target of 5000 citizen for each community pharmacy. Lack of employment opportunities for the pharmacists remains the major obstacle facing PPA and MoH.

Allocation of resources, setting professional pharmacy practice standards, training and development of existing pharmacists in workforce and, raising competency standards to cope with international goals would open job opportunity in pharmacy practice in Palestine. Hence, training and continuing education have strong motivating effects. They allow individuals to cope better with the requirements of their job, enable pharmacist's to engage in more demanding duties, get promoted positions and to achieve personal goals of professional improvement. Pharmacists are medicine experts who possess a unique and complex body of knowledge and skills. The competencies identified in the framework aim to describe the capacities that are central to pharmacists performing effectively in professional practice (PSI, 2013).

Training needs assessment is a "process of collecting information about an expressed or implied organizational need that could be met by conducting training" (Barbazette, 2006, p. 5). "A training needs assessment can help determine current performance or knowledge levels related to a specific activity, as well as indicate the optimal performance or knowledge needed" (Cekada, 2011, p.29). It would confirm that time, money and resources utilized to develop and conduct any training program would be spent efficiently and achieve the desired performance-based outcome. Training needs assessment aid in the development of relevant substantial education courses for health care professionals to

upgrade their skills according to the latest developments and interventions in clinical practice (Hicks and Hennessy, 1997).

Normative needs are defined as the measured gap between the set standards and the individual's or group's current knowledge (Lawton, 1999). From medical perspective, normative needs includes knowledge, skills, attitudes and performance of the residents. Such standards are set and determined by the national certifying bodies, expert opinion, or research information (Ratnapalan & Hilliard, 2002).

According to FIP, Competency can be defined as, "Knowledge, skills, behaviors and attitudes that an individual accumulates, develops, and acquires through education, training, and work experience" (FIP, 2012, p.18). Accordingly, competency assessment is a fundamental step in assessing existing knowledge and skills. A competent pharmacist should provide the highest quality of healthcare to their patients, with a lower rate of medication errors, to ensure better health outcomes and patient satisfaction.

2.2 International studies

Inadequate research investigated the need of training needs assessment among pharmacists. One cross-sectional study was conducted by Pfleger (2008) among 904 community pharmacists in Scotland with 24% response rate to assess the education and training needs of community pharmacists to support the expanded public health role. The questionnaire explored issues of public health function, competencies, education and trainin. Most participants were aware of the term "pharmaceutical public health". Findings indicated that community pharmacists are not so confident about their ability to deliver the public health element of the community pharmacy contract in Scotland. Also, pharmacists expressed the need for education and training, particularly in the core areas of health promotion and collaborative working (Pfleger, *et al*., 2008)

Another cross-sectional study was conducted by Okpalanma (2013) among community pharmacies in Anambra, state of Nigeria, to develop and validate a questionnaire for the assessment of community pharmacists' efforts in the provision of pharmaceutical care. Data collection was through self administered questionnaire which was developed parallel with the Behavioral Pharmaceutical Care Scale (BPCS). Construct validity showed internal reliability of the questionnaire. High cronbach's alpha value had yielded (0.924). The results from the development process indicate that the questionnaire is valid and reliable, and so might be a valuable instrument for assessing pharmaceutical care practiced by community pharmacists in African countries (Okpalanma *et al*., 2013).

A cross sectional study performed in Malta was conducted by Sammut in 2009 on 215 health providers in government primary health centers and clinics with a response rate of

43%. Data collection was by self-administered questionnaire for training needs assessment. Findings of the study indicated that the program topic and the lecturer were the important determinant factors to attend a training course or not. On the other hand, specific obstacles to training emerged that are directly related to one's profession: these included shortage of staff and lack of time (Sammut, *et al.*, 2009).

2.3 Regional studies

A pilot study was conducted in Qatar by El-Haj in 2011 on 58 patients who visited three major pharmacies with a response rate of 60%. It aimed to investigate the public's use of community pharmacy, and to determine the public's perspectives and satisfaction with community pharmacy services provided in Qatar. Data collection was by personal interviews using a multipart pre-tested survey. Findings of the study indicated that most patients (93%) agreed that the community pharmacist should provide them with the medication directions of use. On the other hand, 79% of patients demanded pharmacist's to advise them about the treatment of minor ailments. The study recommended to address identified issues and to promote the community pharmacist's role in drug therapy monitoring, drug information provision, and health screening (El-Haj, 2011).

One cross-sectional study was conducted by Al-Hassan (2009) among random 100 community pharmacists in Saudi Arabia with 24% response rate to determine the competence of community pharmacists in monitoring drug-drug interactions, adherence to pharmacy regulations and patient counseling. Data collection was through self administered questionnaire. Only five of the total sample warned patients about the

possible drug interaction, even though most of the practitioners stated that their education prepared them to monitor drug-drug interaction and they feel confident in this role. Furthermore, 95% of pharmacists did not adhere to the profession legislation Act regarding antibiotic dispensing. The study recommended a strategy necessary for expanding and improving the quality of pharmaceutical services in community practice (Al-Hassan, 2009).

2.4 Local studies

One cross-sectional study was conducted by Sweileh (2013) to assess pharmacists' dispensing practices, attitudes, and knowledge regarding herbal products. A convenience sample of 100 community pharmacists in north Palestine was involved using a self-administered questionnaire as a study tool. The majority of participants (91%) believed that herbal products were beneficial and 61% believed these had fewer side effects than conventional medicines. One important result was that although most participants thought they have good knowledge of herbal preparations, their actual knowledge in response to factual questionnaire was low. The study concluded that continuing pharmacy education in general is needed for community pharmacists to qualify them to provide a better pharmaceutical care and overcome such weakness in the current practice (Sweileh, 2013).

This was also obvious in another cross sectional study that was conducted by Abu Arah (2012) in Palestine to assess knowledge of community pharmacists about safety of medicines during pregnancy and evidence based therapy of herbal products. A total of 342 pharmacists responded to the study using self-administered questionnaire as a study tool. The findings showed insufficient competency in providing information about safety of

medications during pregnancy among community pharmacists. The study justified such results to lack of knowledge in certain aspects of pharmacy practice such as, evidence based indication of herbal products, herbal-drug interactions and medication safety during pregnancy. The study suggested the government, universities and pharmaceutical association should provide community pharmacists with continuous and up-to-date medication knowledge to improve patient counseling. Continuing pharmacy education program was the major recommendation of the study (Abu Arah, 2012).

Chapter Three

Conceptual Framework

3.1 Introduction

This chapter discusses the conceptual framework of the study and associated definitions. It also, presents dependent and independent variables, a review of theoretical background and relevant studies.

3.2 Theoretical Framework of the study

Training needs assessment can be defined as, " ongoing process of gathering data to determine what training needs exist so training can be developed to help the organization accomplish its objectives" (Brown, 2002, p.569). Human resources experts should be aware that training must target building necessary skills of employees. This is evident in Cekada (2011) that determining training needs, justifying costs and benefits and identifying gaps between individual's existing and required skills for effective job performance are essential steps before development of effective training program.(Cekada, 2011).

Since the key to a successful pharmacy practice lies in the ability of practitioners to provide competent pharmaceutical care, it is a necessity to determine whether current pharmacists has been equipped with the knowledge and skills to meet the changing needs of pharmacy practice or not. Such knowledge and skills should be identified in order to be

addressed in training programs. Several studies established in Palestine had drawn attention to the importance of implementation of continuing education program.(Abu Arah, 2012; Khdour & Hallak, 2012; Sweileh, 2013).

Development and maintenance of competence among healthcare professionals, in general, and pharmacists, in specific, contributes to the improvement of therapeutic outcome and patients' quality of life. This, also, leads to noticeable initiatives and interests in public health of the society and in innovative scientific advancements. Such competencies represents knowledge, skills, attitudes and behaviors that are developed through education, experience, training and development (FIP, 2015).

FIP had set a global framework that can be used to reinforce professional development and continuous education frameworks, to integrate pharmaceutical sciences into practice and to maintain pharmacists' competencies and performance in all countries (FIP, 2009). It consisted of four domains that are shown in figure (3.1).

Scientific Knowledge	
Pharmaceutical Public Health Health promotion Medicines information and advice	**Pharmaceutical Care** Patient consultation and diagnosis, Assessment of medicines, Compounding medicines, Dispensing Medicines, Monitor medicines
Population Focus	**Patient Focus**
System Focus	**Practice Focus**
Organization and management Budget and reimbursement, HR management, Improvement of service, Procurement, Supply chain and management, Workplace management	**Professional / Personal** Communication skills, CPD, Legal and regulatory practice, Professional and ethical practice, QA and research in the workplace, Self-management
Management Knowledge	

Source: FIP GbCF v1, 2009 (available at: www.fip.org/humanresources).

Figure 3.1: Domains and illustrative competencies from the GbCFv1 for pharmaceutical services

3.3 Conceptual framework of the study

The conceptual framework of the current study is derived from the previously mentioned framework figure (3.1). It was modified and tailored to meet Palestinian pharmacy profession qualifications as stated by MoH and PPA. The FIP Global Competency Framework domains were integrated into the current study framework to compose the study tool. The operational framework of the current study included the domains of the training needs and competency (knowledge and skills) along with the independent variables (gender, age, etc.). Figure (3.2) illustrates the conceptual framework of the study.

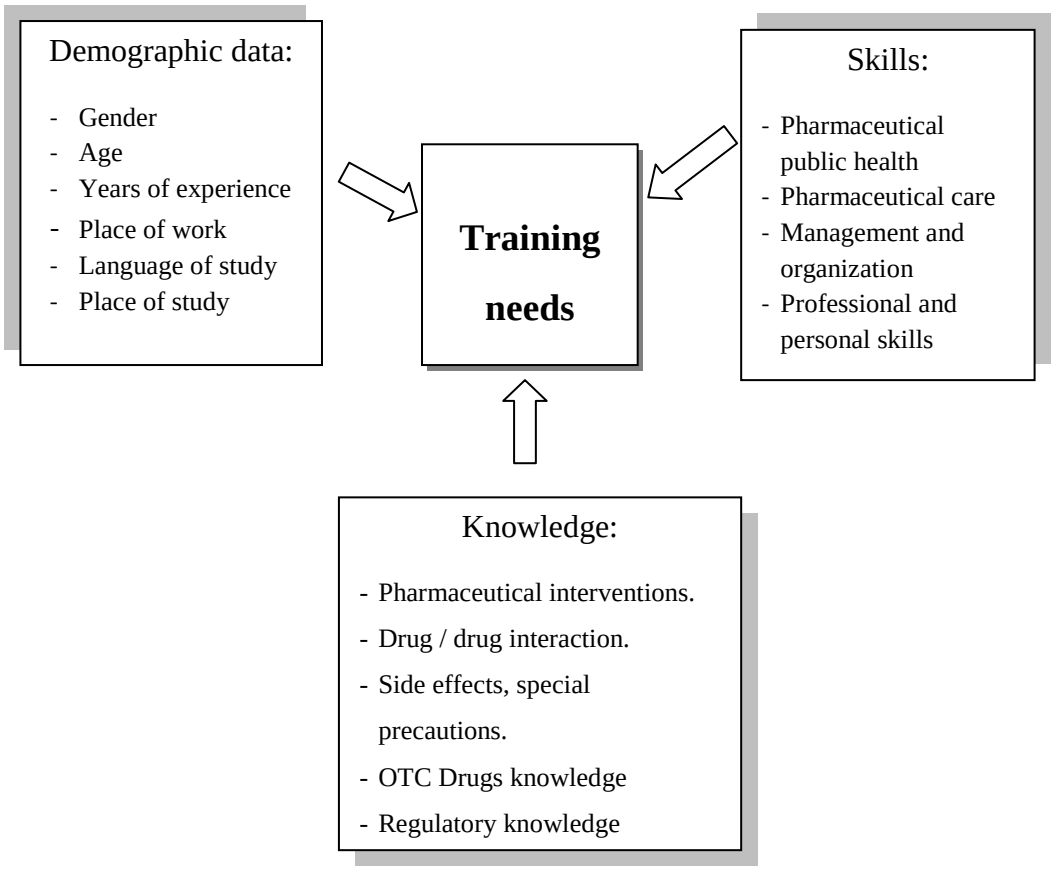

Figure 3.2: Conceptual framework of the study

The study questionnaire was developed with reference to WHO / FIP guidelines. It focused on good pharmacy practice, the global competency framework, the competency standards approved and stated by the Canadian National Association of pharmacy regulatory authority, the Irish pharmaceutical society core competency framework for pharmacists and national pharmaceutical policy set by the Palestinian Ministry of health.(MSOP, 2009; WHO, 2011; FIP, 2012; MoH, 2013; PSI, 2013).

3.3.1 Conceptual definitions:

Training needs assessment – "Ongoing process of gathering data to determine what training needs exist so training can be developed to help the organization accomplish its objectives". (Brown, 2002, p.569).

Continuous education – "A structured process of education designed or intended to support the continuous development of pharmacists to maintain and enhance their professional competence". (Rouse, 2004, p. 2070).

Competencies – "Knowledge, skills, behaviors and attitudes that an individual accumulates, develops, and acquires through education, training, and work experience". (FIP, 2012, p.018).

Pharmaceutical care – "The responsible provision of medicines therapy for the purpose of achieving definite outcomes, to improve patient's quality of life". (WHO, 2006, p.70).

Skills – "Complex acts that, while requiring knowledge, also involve performance". (Alston *et al.*, 2015, p. 1).

Knowledge management – "Systematic approach to acquiring, analyzing, storing, and disseminating information related to products, manufacturing processes and components". (available at:

http://www.ispe.org/glossary?term=Knowledge+Management#sthash.Fz3loZ4n.dpuf)

3.3.2 Operational definitions:

Table (3.1) illustrates operational definitions of both independent and dependent variables that are mentioned in the study**.**

Dependent variable: which includes training needs assessment of pharmacists registered in Ministry of Health.

Independent variables: which includes demographic factors, knowledge and skills.

Demographic factors

- Gender (Male / Female).
- Age (20-29 years, 30-39 years,40-49 years, >50 years).
- Qualifications (B.Sc. in Pharmacy, Pharm D, Master Degree, PhD)
- Years of Experience (<5 years, 5-10 years, >10 years).
- Location of the work (Governorate)
- Place of Work (MoH, MMS, NGO's, Community pharmacy).
- Country of Bachelor of Pharmacy education.
- Language used in Pharmacy education (English, Arabic, Russian, others).

Table 3.1.1: Operational definitions of the domains of the study

Domains	Variables	Item No.	Item Details
Training needs assessment More than answer questions and one open ended question			
Q9	Sources of knowledge		
Q10	Areas that require training		
Q11	Improvement of pharmacy competence and suggested training areas		
Skills Questions were developed in five point Likert-scale; where 5 represents 'always', 4 'often', 3 'sometimes', 2 'rarely' and 1 'never'.			
Pharmaceutical Public Health	Health promotion	Q32	Engage in health promotion activities
	Medicine information and advice	Q30	Ensure to provide health information to patients.
		Q31	Provide updated medicines information to patients and doctors.
Pharmaceutical Care	Patient consultation and diagnosis	Q25	Communicate the patient's progress on their drug therapy to their doctor.
		Q26	Refer patients to the doctor when necessary.
		Q24	Explain to patients what they should expect from their medicine.
		Q25	Monitor patients' progress after dispensing the medicine.
	Assessment of medicines	Q19	Assess pharmaceutical and pharmacological aspects of the dispensed medication (e.g. appropriate dosage form, dose).
		Q20	Explain to patients how to take the medication and for how long and possible side effects
		Q23	Actively involved in the selection of the most appropriate medication for the patient.
		Q24	Identify any drug-related problem patients may be experiencing.
	Dispensing	Q17	Restrict to dispense prescribed item only.
		Q18	Ensure a prescription is legally valid.
		Q19	Assess pharmaceutical and pharmacological aspects of dispensed medications
		Q20	Explain how to take the medication and for how long and possible side effects
		Q21	Ensuring that the patient has understood the information provided
		Q22	Consider cultural issues that may affect compliance with prescribed therapy when counseling patients about medications.
	Medicines	Q17	Restrict to a prescription item only during dispensing.
		Q19	Assess pharmaceutical and pharmacological aspects of dispensed medication.
		Q23	Be actively involved in the selection of the most appropriate medication for the patient.
	Monitor medicine therapy	Q25	Monitor patients' progress after dispensing the medicine.

Table 3.1.2 : Operational Definition of the domains of the study

Domains	Variables	Item No.	Item Details
Organization and management	Budget and reimbursement	Q16	Ensure that the pharmacy makes a good profit.
	Human Resources management	Q14	The environment within the pharmacy reflects a professional setting both in terms of staff and facilities.
	Improvement of service	Q15	Provide suitable private area with minimal distractions for patient counseling.
	Work place management	Q13	Ensure that pharmacy is supplied with proper quantities of good quality medicines.
		Q14	The environment within the pharmacy reflects a professional setting both in terms of staff and facilities.
Professional / Personal	Communication skills	Q21	Ensure that the patient has understood the information provided
		Q25	Monitor patients' progress after dispensing the medicine.
		Q26	Refer patients to the doctor when necessary.
		Q27	Establish professional relationships with doctors to enable joint therapeutic management of patient.
		Q28	Consult other pharmacists about specific patient problems.
		Q29	Establish communication with other healthcare professionals or agencies to refer patients with social problems.
	Continuing professional development (CPD)	Q33	Have access to appropriate informational services to enable efficient practice.
		Q34	Regularly participate in high quality continuing education programs to enable competency improvement.
		Q35	Engage in self-assessment of competence and professional activities.
Knowledge Dichotomous questions (where one choice is the right answer)			
Pharmaceutical scientific knowledge		Q36	Herbal medicine
		Q27	Drug contraindications
		Q38	Special precautions in medications
		Q39	Pharmacovigilance
		Q40	Pharmacology / Chemotherapeutic agents
		Q41	Recent interventions in drug indications
		Q42	Cosmetic preparations/ FDA rules
		Q43	Over the Counter Practice
		Q44	Special mental disorders
		Q45	Patients at risk and special care
Legal and regulatory practice		Q46-Q50	True / False questions that are set by PPA and MoH for pharmacy practice and licensure

Chapter Four

Methodology

4.1 Introduction

This study aims to assess training needs, knowledge and skills among Palestinian pharmacists in West Bank who are working in either community pharmacies or governmental Palestinian health facilities. This chapter describes the methodological approach followed in this study to achieve the above-mentioned target (i.e. research instrument, data collection, data processing, and analysis) in more details.

4.2 Study Design

Quantitative cross sectional study design was employed to serve the study aim and goals. Quantitative research is about collecting numerical data, making observations and measurements of the phenomena that can be subjected to statistical analysis, repeated and replicated by the same or other researchers under similar conditions (Mann, 2003). For a variety of reasons, the majority of survey research conducted in health and human performance uses questionnaires as the data gathering tool (Baumgartner & Hensley, 2006). For example, when data has been quantified, it can be used to compare or contrast other research and to measure change in performance. Cross sectional study measures the prevalence of the outcomes and determinants in a population at a given point of time (Mann, 2003). As there is no follow up and less resources are required to run the study (i.e. only one group is used, data are collected only once and multiple outcomes can be studied). This is the main advantage of this study design (Mann, 2003). However, cross

sectional studies do not differentiate between cause and effect or the sequence of events (Mann, 2003).

4.3 Sampling Methodology

A proportionate stratified random sampling technique was used to serve the study aim and goals. In proportionate stratified sampling, the size of the sample selected from each stratum is proportional to the relative size of that stratum in the study (target) population. Each sample is considered to be a self-weighting sample; where the same sampling fraction is applied to each stratum, giving every element in the population an equal chance to be selected (Daniel, 2012).

Unfortunately, an official list that include all pharmacists living in the West Bank and practicing pharmacy as a profession does not exist up to the time this study was performed and ended (PPA, 2016). The existing list that was provided by the PPA includes all registered pharmacists regardless their area of practice (i.e. administration, industry, marketing, unemployed, etc.). The actual number of practicing pharmacists was out of reach. To overcome this obstacle, the list that included all pharmacies in West Bank, detailing actual number of pharmacies in each governorate was adopted to be the alternative list. Consequently, all governmental hospitals and primary healthcare centers were approached instead of individuals.

According to the Palestinian Pharmaceutical Association records, there are 979 community pharmacies in the West Bank (PPA, 2015). According to the Ministry of Health Annual Report – 2014, there are 145 registered pharmacists that practice pharmacy in governmental hospitals and primary healthcare centers in West Bank (50 in hospitals and

95 in primary healthcare centers) (MOH, 2014). Table (4.1) presents the sampling frame of the study from which the sample size was detected.

Table 4.1: Sampling frame of the study

Region	Governorate	No. of Community Pharmacies	No. of Pharmacists working in MoH
Northern Region	Jenin	133	25
	Nablus	181	33
	Qalqilia	47	11
	Tulkarem	83	15
Central Region	Jerusalem	77	6
	Jericho	12	3
	Ramallah	154	12
Southern Region	Bethlehem	76	11
	Hebron	216	29
Total		979	145

Source: (PPA, 2015; MoH 2014 pp. 190, 191, 193).

Inclusion Criteria:

- Palestinian pharmacists that are registered in the Palestinian Pharmaceutical Association (PPA), licensed from the Palestinian Ministry of Health and work in community pharmacies in West Bank.
- Palestinian pharmacists that are registered in the Palestinian Pharmaceutical Association (PPA), licensed from the Palestinian Ministry of Health and work in governmental hospitals or healthcare centers in West Bank.

Exclusion Criteria:

- Registered pharmacists who work in pharmaceutical areas other than pharmacy practice (administration, marketing, industry, etc.).
- Registered pharmacists who do not work in pharmaceuticals related jobs.

The sample size was calculated using Raosoft® sample size calculator. (http://www.raosoft.com/samplesize.html). The minimum recommended sample size was 282 community pharmacists and 112 governmental pharmacists (a total of 394 pharmacist). The yielded number was confirmed by following random sample size equations as following:

$$n_0 = \frac{Z^2\, p\, q}{e^2} \qquad \text{Equation (1).}$$

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \qquad \text{Equation (2).}$$

Where $\boldsymbol{n_0}$ represents sample size, $\boldsymbol{N}$ represents total population, $\boldsymbol{Z}$ is confidence level score = 1.96 for 95% confidence level, $\boldsymbol{p}$: estimated proportion of an attribute that is present in the population which is 50% and expressed as decimal (0.5 for sample size), and $\boldsymbol{q}$ is 1-p, $\boldsymbol{e}$ is margin error which is 5% (confidence interval) expressed as decimal (0.05). Because a given sample size provides proportionately more information for a small population than for a large population, the sample size was adjusted using Equation (2) (Lohr, 2010).

Then, proportionate stratified random sampling equation was used to ensure that the sample size of each stratum is proportionate to the population size of the stratum. Strata sample sizes are determined by the following equation :

$$n_h = \frac{N_h}{N} \times n \qquad \text{Equation (3)}$$

where $\boldsymbol{n}_h$ is the sample size for stratum h, $\boldsymbol{N}_h$ is the population size for stratum h, $\boldsymbol{N}$ is total population size, and $\boldsymbol{n}$ is total sample size (Lohr, 2010). Table (4.2) represents the actual minimal sample size.

Table 4.2: Actual sample size of the study

Region	Governorate	No. of Community Pharmacies	No. of Pharmacists working in MoH
Northern Region	Jenin	38	19
	Nablus	52	25
	Qalqilia	14	9
	Tulkarem	24	11
Central Region	Jerusalem	22	5
	Jericho	4	3
	Ramallah	44	9
Southern Region	Bethlehem	22	9
	Hebron	62	22
Total		282	112

4.4 Settings of the study

The study was conducted in West Bank area. West Bank is divided into three regions that include nine governorates which are: Northern region; Jenin, Nablus, Tulkarem, Qalqilia, Central region; Jerusalem, Jericho, Ramallah and the Southern region; Bethlehem and Hebron. The study included all Palestinian governorates in West Bank. All Pharmacies names in each governorate (strata) were entered in the computer in order to select the sample randomly (simple random sampling) using Microsoft Excel's random number generator. The yielded random tables for each governorate were adopted and followed by the given randomized. All pharmacists in each community pharmacy or governmental health facility were asked to participate in the study. An explanation of the study rationale was provided and pharmacists were assured that the survey would measure training needs and competence. Willingness to participate in the study was a fundamental condition. Any pharmacist expressed unwillingness to participate or was not present on job location at the time of data collection was left and the second in the list was approached until the required sample number was completed.

4.5 Instrument of the study

Self – administered questionnaire designed for pharmacists was conducted in West Bank (Annex 1). The questionnaire was developed to investigate knowledge, skills regarding the needs for training and continuous education of community pharmacists.

The study questionnaire was developed with reference to WHO / FIP guidelines on good pharmacy practice, the global competency framework, the competency standards approved and stated by the Canadian National Association of pharmacy regulatory authority, the Irish pharmaceutical society core competency framework for pharmacists and national pharmaceutical policy set by Palestinian Ministry of health (MSOP, 2009; WHO, 2011; FIP, 2012; MoH, 2013; PSI, 2013).

The questionnaire was developed by reviewing relevant literature and questionnaires used in similar studies (Hennessy, 2006; Abu Arah, 2012; Okpalanma *et al*, 2013; Sweileh *et al.*, 2013; Al Akshar *et al.*, 2014). The questionnaire was designed by the researcher and tailored to the Palestinian setting to assure its applicability.

The initial draft of the questionnaire was circulated for face validity by an expert committee of four pharmacists (a pharmacist working in a community pharmacy, a pharmacist working in Ministry of Health hospital, a pharmacist working in General Directorate of Pharmacy; Pharmaceutical Knowledge section, and a pharmacist in the PPA Head Board). Face Validity can be described as the sense that the questionnaire looks like it measures what it was intended to measure. It is a quick review rather than an in depth examination (Moskal & Leydens, 2000).

Content validity was performed by a committee of six experts, three PhD degree holders (a lecturer from the School of Public Health at Al-Quds University, a lecturer in the School of Pharmacy at Al-Quds University, a pharmacist working in General Directorate of Pharmacy in Ministry of Health), one member of PPA head board and a certified statistician working in educational research center. They assessed the content of each domain relevant to the study goals and aim, the content of each item based on its relevance as well as comments on the length of the questionnaire. Content validity involves examination of the content to determine whether it covers a representative sample of the behavior domain to be measured (Moskal & Leydens, 2000). Modifications were carried out as per the suggestions.

The final questionnaire was comprised totally of 50 questions divided into four sections (Annex 1). The first section included participants' demographic data such as respondent's gender, age, educational level, years of experience, pharmacy school, pharmacy study language and work location. The second section assessed training needs. It was designed to address pharmacists' sources of knowledge and their needs for training and continuous education. Training needs section was composed of 4 questions that asked the respondent to determine their personal source of knowledge, to express any additional opinions to improve pharmacists' competencies and one open-ended question invited the respondents to suggest possible ways to improve community pharmacist competence and to suggest suitable training procedures to improve competency. The third section assessed skills. It was designed to assess existing pharmaceutical skills (managerial, dispensing, pharmaceutical care, communication, public health and continuous learning skills). Skills section included 23 questions that were developed in five point Likert-Scale (Okpalanma *et al.*, 2013) where 5 represents 'always', 4 'often', 3 'sometimes', 2 'rarely' and 1 'never'. The fourth section, which examined knowledge, was comprised of 10 multiple choice

questions (where one choice is the right answer) and 5 true/false questions. Knowledge section was designed to assess pharmacist's existing knowledge in pharmacy (adverse drug effect, herbal medications, pharmacology, contraindications, recent drug interventions, OTC dispensing and regulations set by MoH and PPA).

The questionnaire was developed in English language and translated into Arabic by two native Arabic pharmacists. Another two native Arabic pharmacists had translated the questionnaire back to English to ensure accuracy of the tool.

The questionnaire included all the dependent and independent variables and was designed properly in order not to consume more than 25 minutes in time to be completed. All questions were close-ended, inclusive and covered the targeted content. Only one open-ended question invited the respondents to suggest possible ways to improve community pharmacist competence and to suggest suitable training procedures to improve competence.

Table 4.3 : Sources of questionnaire scales

Variable	Source of scale / question
Section 1: Demographic Data	Specially designed for the study
Section 2: Training and continuous education needs	Collins, 2007
	FIP **Global Competency Framework, Version 1**, 2012
	Hennessy-Hicks Training Needs Analysis Questionnaire and Manual, 2001
	Leikola, *et al.* with the TIPPA Coordination, 2009
Section 3: Pharmaceutical Skills	FIP **Global Competency Framework, Version 1**, 2012
	Joint FIP/WHO guidelines on good pharmacy practice, 2011
	The Pharmaceutical Society Of Ireland Core Competency Framework for Pharmacists 2013
	Model Standards of Practice for Canadian Pharmacists 2009
	Okpalanma, 2013
Section Four: Knowledge	
Herbal medicine	PPA pharmacy licensure exam
Drug contraindications	PPA pharmacy licensure exam
Special precautions in medications	General Directorate of Pharmacy, MoH
Pharmacovigilance	General Directorate of Pharmacy, MoH
Pharmacology / Chemotherapeutic agents	PPA pharmacy licensure exam
Cosmetic preparations/ FDA rules	The Rx Consultant improving patient care through drug education
Recent interventions in pharmacology	General Directorate of Pharmacy, MoH
Over the Counter Practice	The Rx Consultant improving patient care through drug education
Special mental disorders	The Rx Consultant improving patient care through drug education
Patients at risk and special care	Oxford University Press, online resource centers, Pharmacy Practice
Regulatory Knowledge Questions	PPA and MoH pharmacy licensure exam

4.6 Pilot Testing

Before using of the prepared questionnaire in the research study, it was tested for validity and reliability to confirm proper construction of questions and readiness to be used. And so, the questionnaire was administered to a total of 30 pharmacists who were excluded from the study sample and were not allowed to participate later in the research study. Pilot

study was performed in July 2015 to revise and finalize the questionnaire. Depending on the comments from the pilot testing, minor adjustments were performed to develop the final questionnaire (some questions were reworded depending on pharmacists' feedback to clarify the questionnaire language). The final questionnaire included 50 questions.

Results of the pilot study was as following:

Of the 30 participants, 53.3% were females, 50% of participants' age was between (20-29) years old range, 93.3% of participants' held bachelor degree in pharmacy. Data was tested for Read Normality using Kolmogorov– Smirnov test. Pearson correlation was used to test for correlation between test scores and other variables. The reliability of the instrument was assessed using Cronbach's alpha coefficient, the internal consistency testing gave the following values: 0.802. Split half test (Spearman-Brown Coefficient) was 0.732 for dichotomous knowledge data.

The questionnaire was tested for Readability. According to Flesch-Kincaid Reading Ease, the result was 57.5 which means that the questionnaire has an average grade level of about 8 (based on the USA education system). This result suggests that the questionnaire's language can be read easily by any pharmacist who can read and understand English language. (Flesch-Kincaid Reading Ease results are based on a 0-100 scale). A high score means the text is easier to read according to the equation: 206.835 - 1.015 x (words/sentences) - 84.6 x (syllables/words)) (Simpson D., 2014).

Accuracy of measurements is a fundamental cornerstone in scientific and social research (Moskal & Leydens, 2000). Reliability refers to the stability or consistency of information that is obtained when a measurement is performed at once. It also can be defined as the

degree to which an instrument yields the same data each time it used under the same conditions and with the same subjects (Baumgartner & Hensley, 2006). Reliability can be expressed as stability (consistency over time and samples); equivalence (inter-rater reliability) and as internal consistency (Cronbach's alpha coefficient and split-half reliability) (Golafshani, 2003).

Internal consistency reliability: which estimates reliability by grouping questions in a questionnaire that measure the same concept. After collecting responses, these responses are correlated by using Cronbach's Alpha Coefficient, which is utilized in this study (Baumgranter & Hensley, 2006).

Split-half reliability is a subtype of internal consistency reliability for measures for knowledge tests that are composed of multiple choice and/or true/false items (dichotomous choices). It is analogous to Cronbach's α, except Cronbach's α is also used for continuous measures (Baumgartner & Hensley, 2006). The entire test is administered to a group of individuals, the total score for each “set” is computed, and finally the split-half reliability is obtained by determining the correlation between the two total “set” scores (Moskal & Leydens, 2000). Knowledge section was examined by split half assessment tool for internal consistency. Computation of factor analysis for each item resulted in confirming that all items had correlation values > 0.7.

Validity is "the degree to which interpretations of test scores or measures oderived from a measuring instrument lead to correct conclusions" (Baumgranter & Hensley, 2006, p. 86) In addition to previously mentioned face validity and content validity, construct validity was carried out on some items of the questionnaire.

4.7 Data Collection

Data collection took place between November 2015 and December 2015. The researcher, personally, collected data in Palestinian governorates (Tulkarem, Jenin, Nablus, Qalqilia, Ramallah, Jerusalem, Jericho, Bethlehem and Hebron. The researcher followed the random order of pharmacies in each governorate. Pharmacists willing to participate in the study were provided with the study information sheet with a clear fully verbal explanation of the study rationale and were assured that the survey would measure training needs and competence. Participants were requested to express verbal consent before filling the questionnaire. Participation was voluntary and no incentives were given to the participants. No attempt was made to prompt the respondents by suggesting answers directly. Confidentiality of the obtained data was assured to each participant. As mentioned previously, the sample size was calculated using Raosoft® sample size calculator. The minimum recommended sample size was 282 community pharmacists and 112 governmental pharmacists. The final chosen sample size was 350 community pharmacies and 120 governmental pharmacists to overcome non response.

4.8 Statistical Analysis

Descriptive statistics present data in a meaningful way, which allows simpler interpretation of the data. Measures of central tendency including the mean, mode and median were calculated. Measures of spread; including absolute deviation, variance and standard deviation were also calculated. Tabulated description, graphical description and statistical commentary were produced to summarize the spread out of data.

In inferential statistics; univariate analysis, analysis of variance was used to test associations between skills, and knowledge scores in relation to different respondent characteristics. Respondent characteristics that were significantly associated with skills or knowledge at $P< 0.05$ were entered into a multivariate linear regression model to compute adjusted scores. Any adjusted score that was significantly associated with skills or knowledge at $P< 0.05$ using multivariate linear regression was considered one of multiple predictors of the tested variable (i.e. skills or knowledge) (Hamdan, 2013). Data was analyzed using the Statistical Package for Social Science (SPSS), version 17.0. The data was checked for entry errors (data clearance).

4.9 Ethical Consideration

- Ethical approvals were obtained from Al-Quds University - Faculty of Public Health review board to conduct the study and distribute the questionnaire.
- Approvals were obtained from Ministry of Health and from Palestinian Pharmaceutical Association to conduct the study. Permission letter was sent to them from School of Public Health in Al-Quds University. Approval letter was obtained to facilitate the researcher mission in data collection.
- Participation in the study was purely voluntary, participants had the right to refuse to participate or leave the study at any time. All participants were informed in details about the aim and objectives of the study. Verbal consent was obtained and all questions and concerns were met properly.
- Participants were assured of the confidentiality of their responses. There will be no identifying mechanisms, like codes or names or even numbers, that might trace

individual answers to a specific participant. All participants were appreciated for their cooperation, time and interest in the study.

- The study didn't present any conflict of interest.

4.10 Summary

This chapter presents an overview of the study methodology. It describes the study design, sampling methods, validity and reliability testing of the study instrument, data collection and analysis.

Chapter Five

Results

5.1 Introduction

The researcher visited 350 community pharmacies and 120 governmental pharmacists to overcome non response. Incomplete questionnaires were neglected, a total of 377 questionnaires were completed with a total response rate of 80%.

5.2 Characteristics of participants

As shown the table (5.1), 59.4% of the participants were females and 48.8% were between 20 and 29 years old. The majority of respondents held B.Sc. in Pharmacy (83.3%) while 9.3% held master degrees. Most of pharmacists (92.8%) studied pharmacy in English language and 67.1% of the participants graduated from school of pharmacies in Palestine. Pharmacists working in governmental hospitals and healthcare facilities formed 28.1% of the participants.

Table 5.1: Demographic characteristics of participants (N=377):

Variable	Freq. (%)
Gender	
Male	151 (40.1)
Female	224 (59.4)
Age (in years)	
20-29	184 (48.8)
30-39	131 (34.7)
40-49	42 (11.1)
50 and more	20 (5.3)
Educational qualifications	
BSc. in Pharmacy	314 (83.3)
Pharm D	28 (7.4)
Master degree	35 (9.3)
Pharmacy education language	
English	350 (92.8)
Arabic	7 (1.9)
Russian	11 (2.9)
Others	9 (2.4)
Years of experience	
less than 5 years	121 (32.1)
5-9	92 (24.4)
10-14	90 (23.9)
more than 15	74 (19.6)
Practice field	
Governmental (Ministry of Health)	106 (28.1)
Private sector	271 (71.9)
Work place location	
Jericho	7 (1.9)
Bethlehem	28 (7.4)
Jenin	53 (14.1)
Hebron	83 (22.0)
Ramallah	51 (13.5)
Tulkarem	32 (8.5)
Jerusalem	26 (6.9)
Qalqylia	23 (6.1)
Nablus	74 (19.6)
Country of education	
Palestine	253 (67.1)
Arab countries	97 (25.7)
Eastern European countries	13 (3.4)
Western European countries	4 (1.1)
Asian countries	8 (2.1)

[(a)] Others languages are: Italian, Romanian, Spanish and Turkish.
[(1)] Arab countries: Egypt, Iraq, Jordan and Syria. [(2)] Eastern European countries: Romania, Russia and Ukraine. [(3)]Western European countries: Italy, Spain.
[(4)] Asian countries: India, Pakistan and Turkey.

5.3 Training needs results:

Data analysis indicated that internet sources were the most chosen source of pharmaceutical information by 83.6% of the participants, while conferences and workshops was chosen by only 26.3% as shown in fig(5.1). Drug information was the most chosen area for training by 74.8% of participants as shown in fig(5.2).

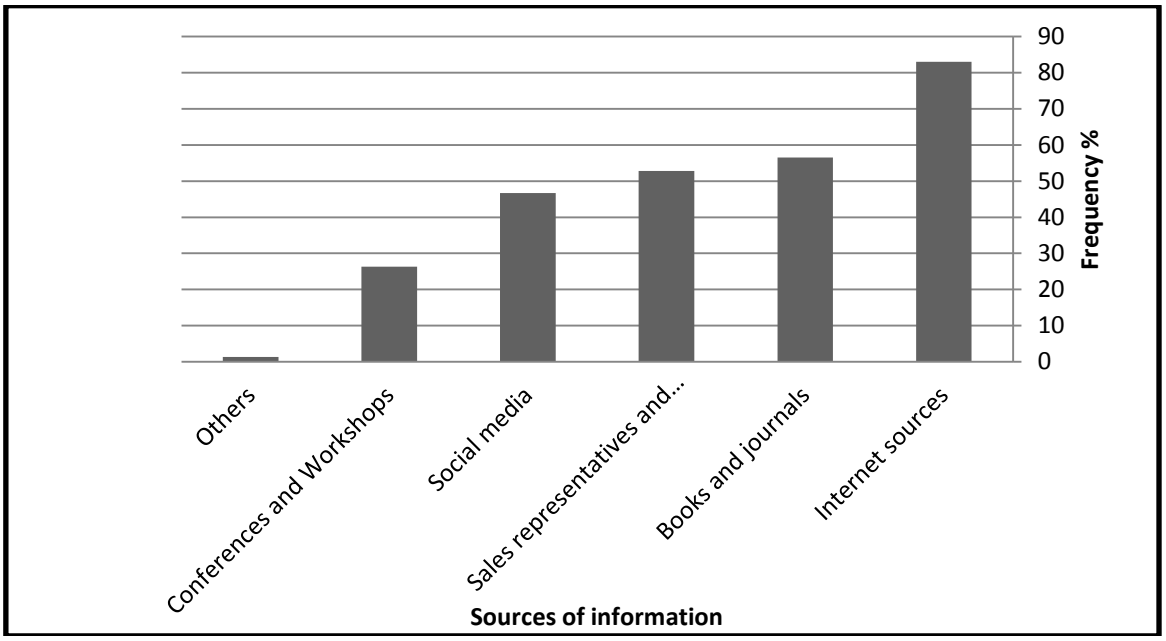

Figure 5.1: Sources of respondents' pharmaceutical information (%).

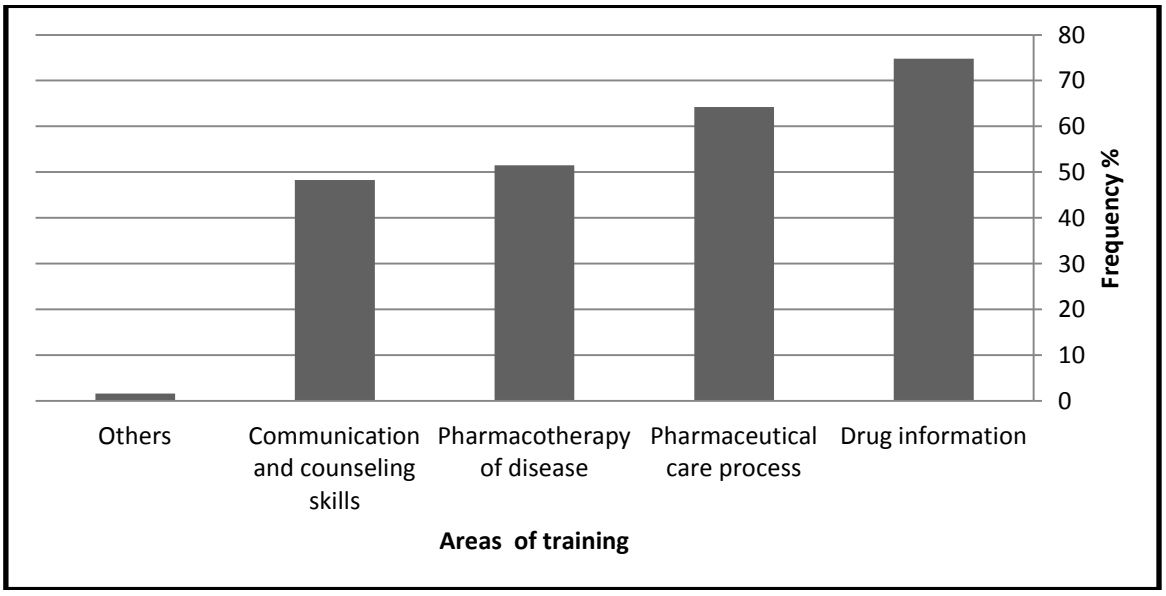

Figure 5.2: Areas of training as reported by participants (%)

One third of the participating pharmacists (114 (30.2%)) answered the open-ended question that asked to suggest possible ways to improve and maintain community pharmacist competence. The answers are stated in table (5.2). The majority (96.5) of the responses suggested to implement a mandatory continuing education program that is set and supervised by PPA. Also, 85.1% of the respondents to the open-ended question supported periodic competency assessment and suggested to make it an essential requirement for re-licensure. It is worth to be mentioned that pharmacists who responded to the open ended question expressed more than one suggestion to maintain and improve the current competencies.

Table 5.2: Suggested solutions to maintain and improve competencies.

Maintaining competency solutions	**Freq. (%)**
Mandatory continuing education programs set by PPA	110 (96.5)
Periodic competency assessment in order to renew licensure	97 (85.1)
Post graduate training programs	52 (13.8)
Open communication channels with other healthcare providers	30 (25.6)
Improve national standards for pharmacy practice by MoH and PPA	4 (3.5)

5.4 Skills results:

As shown in table (5.3), pharmacists reported high level of skills; (mean = 3.98 ± 0.44, standard error of the mean = 0.225). The level of skills was measured in 5-point likert scale ranging from 1 " rarely" to 5 "always". Average skills range (1.0 – 2.32) is considered low, medium (2.33 – 3.65), high (3.66 – 5.00) (Shaheen & Hamdan, 2009).

Table 5.3: Participants' skills scores:

	N	Mean	SE	Std. D
Ensure a prescription is legally valid	376	4.84	0.024	0.463
Ensure the pharmacy is supplied with proper quantities of good quality medicines.	377	4.76	0.026	0.513
The environment within the pharmacy reflects a professional setting both in terms of staff and facilities.	377	4.68	0.03	0.588
Assess pharmaceutical and pharmacological aspects of the dispensed medication (e.g. appropriate dosage form, dose).	377	4.64	0.031	0.595
Explain to the patient how to take the medication and for how long and possible side effects.	377	4.61	0.034	0.668
Restrict to a prescription item only during dispensing.	377	4.59	0.029	0.567
Ensure the patient has understood the information provided	377	4.45	0.039	0.75
Ensure to provide general health information to patients.	377	4.27	0.042	0.818
Refer patients to the doctor when necessary.	377	4.19	0.051	0.998
Establish professional relationships with doctors to enable joint therapeutic management of patient.	377	4.07	0.047	0.91
Have access to informational services for efficient pharmaceutical practice.	377	3.96	0.048	0.936
Consider cultural issues that may affect compliance with prescribed therapy when counseling patients about medications (e.g. contraceptives).	377	3.94	0.052	1.016
Provide updated medicines information to patients and doctors.	377	3.86	0.048	0.932
Consult other pharmacists about specific patient problems.	377	3.77	0.055	1.062
Explain to patients what they should expect from their medicine.	377	3.73	0.053	1.028
Provide suitable private area with minimal distractions for patient counseling.	377	3.72	0.061	1.186
Ensure that the pharmacy makes a good profit.	377	3.62	0.081	1.577
Participate in selection of the most appropriate medication for the patient.	377	3.62	0.055	1.076
Engage in self-assessment of competence, professional activities.	377	3.38	0.054	1.048
Engage in health promotion activities.	376	3.35	0.061	1.184
Follow up patient’s progress on drug therapy (e.g. chronic diseases).	377	3.22	0.06	1.158
Establish communication with other healthcare professionals or agencies to refer patients with social problems.	376	3.14	0.057	1.105
Regularly participate in continuing education programs that addresses competency improvement.	377	2.93	0.062	1.196

All means of skills varied between medium and high. The best score was reported about behaviors to ensure legality of medications and their suitability of medications to be dispensed to patients. The least score was reported for participation in continuing education programs and competency improvement.

Table (5.4) presents the mean skills by the respondents, unadjusted univariate analysis showed that there were significant relationships between skills and practice field and workplace location (governorate) ($P < 0.005$). No significant differences were observed in relation to participants' age, gender, educational degree, years of experience, pharmacy education language or country of pharmacy education ($P > 0.05$). The respondent characteristics that were significantly associated with the mean skills at ($P < 0.005$) were entered into a multivariate linear regression model to compute adjusted means. The results showed that respondents' practice field and workplace location (governorate) remained significant ($P < 0.005$).

On average, pharmacists working in community pharmacies reported better skills than those working in governmental health facilities ($P < 0.001$). Pharmacists working in Ramallah reported the best skills while pharmacists working in Jerusalem reported the weakest skills at ($P = 0.005$)

As a summary, a multiple regression was run to predict skills from practice field and workplace location (governorate). These variables statistically significantly predicted skills, ($F(2,374)= 51.140$, $P<0.001$, $R^2 =0.215$). The two variables added statistically significantly to the prediction, ($P <0.001$) (table 5.4) .

Table 5.4: Skills scores associations with participants' characteristics:

No.	Variable	N	Unadjusted			Adjusted		
			Mean	**SE**	***P***	**Mean**	**SE**	***P***
1	Gender							
	Female	224	3.836	0.090	0.925	N/A	N/A	N/A
	Male	151	3.831	0.086		N/A	N/A	
2	Age							
	40-49	42	4.118	0.295	0.814	N/A	N/A	N/A
	20-29	184	3.803	0.156		N/A	N/A	
	30-39	131	3.711	0.240		N/A	N/A	
	50 and more	20	3.702	0.171		N/A	N/A	
3	Educational qualifications							
	Master Degree	35	3.922	0.104	0.171	N/A	N/A	N/A
	Pharm D	28	3.795	0.109		N/A	N/A	
	B Sc. in Pharmacy	314	3.785	0.079		N/A	N/A	
4	Pharmacy education language							
	Russian	11	4.118	0.295	0.513	N/A	N/A	N/A
	English	350	3.803	0.156		N/A	N/A	
	Arabic	7	3.711	0.240		N/A	N/A	
	Others[(a)]	9	3.702	0.171		N/A	N/A	
5	Years of experience							
	more than 15	74	3.866	0.096	0.419	N/A	N/A	N/A
	less than 5 years	121	3.863	0.110		N/A	N/A	
	5-9	92	3.850	0.102		N/A	N/A	
	10-14	90	3.755	0.099		N/A	N/A	
6	Practice field							
	Private Sector	271	4.061	0.085	**<0.001***	4.067	0.028	**0.001***
	Governmental (MoH)	106	3.607	0.090		3.625	0.040	
7	Work place location (governorate)							
	Ramallah	51	4.022	0.101	**0.004***	4.032	0.055	**0.005***
	Qalqylia	23	3.927	0.109		3.884	0.080	
	Hebron	83	3.919	0.097		3.901	0.043	
	Nablus	74	3.868	0.092		3.913	0.045	
	Jenin	53	3.863	0.097		3.889	0.053	
	Bethlehem	28	3.826	0.112		3.857	0.072	
	Tulkarem	32	3.751	0.109		3.721	0.068	
	Jericho	7	3.686	0.167		3.728	0.144	
	Jerusalem	26	3.640	0.104		3.686	0.076	
8	Country of pharmacy education							
	Asian countries[(4)]	8	4.135	0.173	0.073	N/A	N/A	N/A
	Western European countries[(3)]	4	3.918	0.253		N/A	N/A	
	Palestine	253	3.893	0.173		N/A	N/A	
	Arab Countries[(1)]	97	3.822	0.173		N/A	N/A	
	Eastern European countries[(2)]	13	3.401	0.256		N/A	N/A	

*Mean difference is significant at 0.05 level

[(a)] Others languages are: Italian, Romanian, Spanish and Turkish.

[(1)] Arab countries: Egypt, Iraq, Jordan and Syria.

[(2)] Eastern European countries: Romania, Russia and Ukraine.

[(3)]Western European countries: Italy, Spain.

[(4)] Asian countries: India, Pakistan and Turkey.

N/A: No association

5.5 Knowledge results:

As shown in table (5.5), regulatory knowledge questions had higher correct responses than pharmaceutical knowledge questions. In general, knowledge scores of participants were good (mean = 73.7% ± 20.0; median = 73.3%). The majority (87%) of the participants achieved more than 50% of correct scores fig (5.3).

Table 5.5: Participants knowledge scores (N=377)

No.	Knowledge questions	N	Mean	Std. Deviation	Freq. (%) Answer	
					Correct	Incorrect
1	Drugstore can sell medications for anyone	377	0.98	0.153	368 (97.4)	9 (2.4)
2	Injection administration	377	0.97	0.169	366 (97.1)	11 (2.9)
3	The official license is cancelled in case of selling the pharmacy without MOH approval	373	0.92	0.276	342 (90.7)	31 (8.2)
4	Pharmacology/Chemotherapeutic agents	377	0.86	0.348	324 (85.9)	53 (14.1)
5	Drug contraindications	377	0.84	0.371	315 (83.6)	62 (16.4)
6	Over the counter practice	377	0.84	0.369	316 (83.8)	61 (16.2)
7	Pharmacovigilance	377	0.78	0.415	294 (78.0)	83 (22.0)
8	Licensed pharmacists can manage a pharmacy in the absence of the pharmacist in charge	376	0.78	0.415	293 (77.7)	83 (22.0)
9	Cosmetic preparations/ FDA rules	377	0.75	0.435	282 (74.8)	95 (25.2)
10	Recent interventions in drug indications	374	0.68	0.466	255 (67.6)	119 (31.6)
11	Herbal medicine	377	0.64	0.481	241 (63.9)	136 (36.1)
12	Expiry date can be stamped or printed on medications by the manufacturer	377	0.58	0.495	217 (57.6)	160 (42.4)
13	Special mental disorders	373	0.56	0.497	210 (55.7)	163 (43.2)
14	Special precautions in medications	374	0.48	0.5	180 (47.7)	194 (51.5)
15	Patients at risk and special care	377	0.44	0.496	164 (43.5)	213 (56.5)

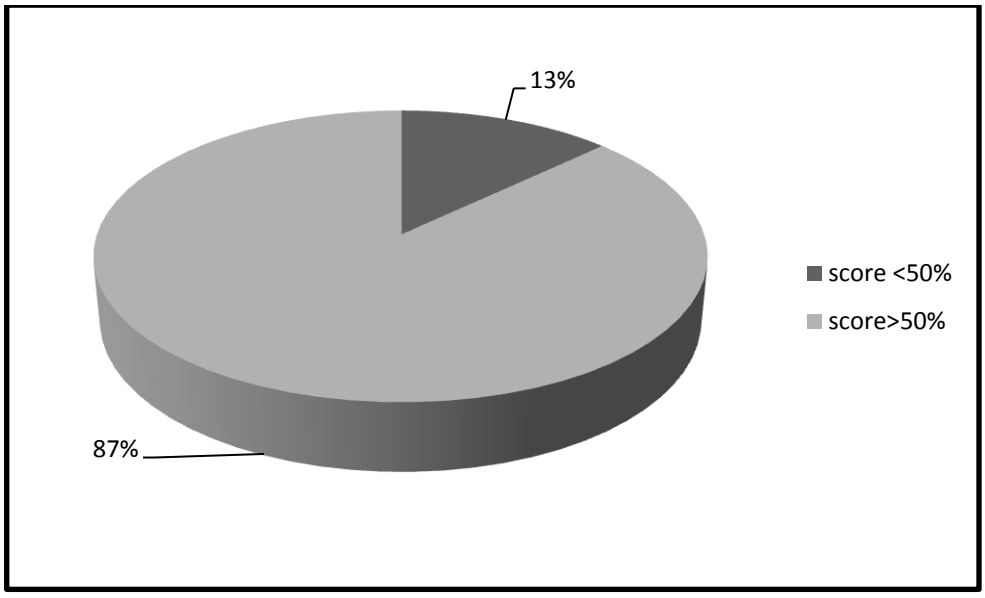

Figure 5.3: Distribution of knowledge scores of participants (%) (N=377)

Table (5.6) presents the mean knowledge scores of the respondent and demographic characteristics. Unadjusted univariate analysis showed that there were significant relationships between knowledge scores and participants' gender, age, educational qualifications, pharmacy education language, practice field, workplace location (governorate) and country of education ($P < 0.05$). No significant differences were observed in relation to the participants' years of experience ($P > 0.05$). Respondent characteristics that were significantly associated with knowledge scores at ($P < 0.05$) were entered into a multivariate linear regression model to compute adjusted means. The results showed that respondents' age, pharmacy education language, years of experience and country of education were not associated with the knowledge scores ($P > 0.05$). Respondents' gender, educational qualifications, practice field and workplace location (governorate) remained significant ($P < 0.05$).

Table 5.6: Knowledge scores association with participants' characteristics:

No.	Variable	N	Unadjusted			Adjusted		
			Mean	SE	*P*	Mean	SE	*P*
1	Gender							
	Female	224	0.748	0.040	0.014*	0.850	0.023	0.020*
	Male	151	0.693	0.038		0.799	0.022	
2	Age							
	20-29	184	0.786	0.048	0.007*	0.842	0.020	0.070
	50 and more	20	0.733	0.054		0.836	0.043	
	40-49	42	0.701	0.049		0.831	0.032	
	30-39	131	0.663	0.044		0.790	0.021	
3	Educational qualifications							
	Master Degree	35	0.841	0.046	<0.001*	0.945	0.032	<0.001*
	B Sc. in Pharmacy	314	0.665	0.035		0.773	0.016	
	Pharm D	28	0.656	0.048		0.756	0.037	
4	Pharmacy education language							
	English	350	0.765	0.069	0.003*	N/A	N/A	N/A
	Others[(a)]	9	0.760	0.075		N/A	N/A	
	Russian	11	0.751	0.130		N/A	N/A	
	Arabic	7	0.607	0.106		N/A	N/A	
5	Years of experience							
	10-14	90	0.760	0.043	0.778	N/A	N/A	N/A
	more than 15	74	0.760	0.042		N/A	N/A	
	5-9	92	0.697	0.045		N/A	N/A	
	less than 5 years	121	0.665	0.048		N/A	N/A	
6	Practice field							
	Governmental (MoH)	106	0.800	0.040	<0.001*	0.905	0.024	<0.001*
	Private Sector	271	0.642	0.038		0.744	0.021	
7	Work place location (governorate)							
	Jericho	7	0.878	0.073	0.011*	0.968	0.066	<0.001*
	Qalqylia	23	0.759	0.048		0.857	0.038	
	Hebron	83	0.740	0.043		0.860	0.026	
	Bethlehem	28	0.718	0.049		0.816	0.038	
	Jerusalem	26	0.703	0.046		0.804	0.037	
	Jenin	53	0.700	0.043		0.813	0.029	
	Ramallah	51	0.680	0.044		0.794	0.029	
	Tulkarem	32	0.664	0.048		0.775	0.034	
	Nablus	74	0.643	0.040		0.735	0.026	
8	Country of pharmacy education							
	Arab Countries[(1)]	97	0.832	0.076	0.004*	N/A	N/A	N/A
	Palestine	253	0.771	0.076		N/A	N/A	
	Eastern European countries[(2)]	13	0.718	0.113		N/A	N/A	
	Asian countries[(4)]	8	0.702	0.076		N/A	N/A	
	Western European countries[(3)]	4	0.580	0.112		N/A	N/A	

*Mean difference is significant at 0.05 level

[(a)] Others languages are: Italian, Romanian, Spanish and Turkish.

[(1)] Arab countries: Egypt, Iraq, Jordan and Syria.

[(2)] Eastern European countries: Romania, Russia and Ukraine.

[(3)] Western European countries: Italy, Spain.

[(4)] Asian countries: India, Pakistan and Turkey.

N/A: No association

On average, females respondents rated better knowledge scores than males at ($P < 0.05$). Pharmacists carrying master degree rated better knowledge scores than pharmacists carrying B.Sc. in pharmacy or Pharm D degrees at ($P < 0.001$). Pharmacists working in governmental health facilities rated better knowledge scores than those working in community pharmacies at ($P < 0.001$). Pharmacists working in Jericho rated the best knowledge scores while pharmacists working in Nablus rated the least knowledge scores at ($P < 0.001$).

As a summary, a multiple linear regression was run to predict knowledge scores from gender, educational qualifications, practice field and workplace location. These variables statistically significantly predicted knowledge, (F (4,370) = 31.947, $P < 0.001$, R^2 = 0.257). All four variables added statistically significantly to the prediction, ($P < 0.001$) (table 5.6).

Chapter Six

Discussion, Conclusion, Recommendation

6.1 Discussion

Research on assessing pharmacists' training needs or knowledge or skills is limited in Palestine. The study is consistent with literature in highlighting the differences in knowledge and skills among pharmacists which confirms the necessity of establishing continuous education program (Sweileh *et al*, 2013; Abu Arah, 2012; Khdour & Hallak, 2012). Palestinian Pharmaceutical Association (PPA) can use results of this study as a foundation for continuing education program or encourage further in depth investigation of pharmacists' current competencies.

Nowadays, electronic knowledge resources are available to pharmacists. Using e-mail and online social websites to provide useful information may enhance learning and have direct effect on improving pharmacist's competencies. Undergoing reflective activities and linking feedbacks could be beneficial for both pharmacists and decision makers (Budzinski, *et al*., 2012). The majority of the pharmacists (83.6%) selected the internet sources as the source of pharmaceutical information (fig 5.1). This result opposed results of studies performed in other countries indicating that although most pharmacists had internet access at their workplace, only a minority of them depend on internet based websites and most of pharmacists prefer to use textbooks as the major reference of drug information (Diobi *et al*., 2013; Wong *et al*., 2009; Zehnder *et al*., 2004). This could be due to the accessibility and availability of search engines (and absence of official drug information reference) that allows pharmacists to seek updated information easily.

Conferences and workshops were the least chosen source of information, such result should be considered by PPA and MoH as shown in fig (5.1). Time constraints, unsuitable time or place and increased interest in internet sources might be reasons behind such loss of interest in workshops and conferences. Drug information was selected the most by respondents (74.8%) (fig 5.2). This can be explained by either loss of interest of other areas of training (pharmaceutical care skills, diagnostics of disease, financial skills, etc.) or absence of the concept of continuing education and maintaining competency. This would lead pharmacists to focus on pharmaceutical knowledge of medication and ignore other role services.

Pharmacy education is changing continuously which would, consequently, lead to change in practice. Practicing pharmacists were mainly educated on the old concept of pharmaceutical product focus. Results from one study performed in Palestine indicated that pharmacists do not provide services (i.e. explain medications) unless requested by the customers. This may indicate that Palestinian community pharmacists tend to dispense medications presuming that the patients are already well informed about their health conditions and about their medications (Khdour & Hallak, 2012). Those pharmacists should engage in lifelong learning to improve their skills and knowledge in order to contribute effectively to the new patient-centered pharmaceutical practice (WHO, 2006). The findings showed a trend towards establishing mandatory continuing education program controlled and supervised by PPA and MoH (table 5.2) where 96.5% of the pharmacists suggested continuing education and periodic competent assessment as a perquisite for licensure renewal. These findings are consistent with earlier studies which have suggested establishing continuous education program to improve pharmacist's competencies (Sweileh, 2013; Abu Arah, 2012; Khdour & Hallak, 2012).

Most human task performance research has suggested that less workload results in a poor performance which would, consequently, lead to a loss in accuracy and a slowing of response time (Cox-Fuenzalida, 2007). Pharmacists working in governmental health facilities are subjected to different working environment than those working in private sector, such as, heavy working hours, intensive work load, annual performance appraisal, lack of employees, periodic training courses and workshops. These differences explains the variation in results that evolved in the current study. Due to heavy working hours and lack of employees, pharmacists cannot find the time to practice their skills and services appropriately. This explains why pharmacists working in private sector reported significantly better skill scores than pharmacists working in governmental health facilities ($P < 0.001$) (table 5.4). On the other hand, attending continuous training courses and workshops explained the significantly better knowledge score of pharmacists working in governmental facilities in relation to those working in private sector ($P < 0.001$) (table 5.6). Such significant differences indicate that practice field is a predictor for investigating pharmacists knowledge and skills and even training needs. And also, confirm the importance of establishing the continuous education program in order to enhance pharmacists' existing competency level.

Results indicated that there are significant differences reported by respondents in skills scores in relation with the governorate where they work ($P = 0.005$) (table 5.4). Pharmacists working in Ramallah reported the best skills scores while pharmacists working in Jerusalem reported the weakest skills. This can be attributed to the current political situation in Palestine. Jerusalem is an occupied governorate where Palestinian authority is weak in Jerusalem governorate due to boundaries and restrictions set by Israeli occupation. The dispersion between two combating authorities led pharmacists to develop

remissive attitude towards pharmacy practice (Arnon, 2007). Pharmacists in such area are interested to achieve the best profit with the least possible effort. They are not willing to provide any services unless being asked to. However, in other governorates, especially Ramallah, Palestinian authority is strong, the Ministry's of Health regulations, PPA role of conduct and ethics are effective and penalties are set upon any illegal violation. Also, most workshops, seminars, or even training courses are usually set in Ramallah which opens the opportunity to pharmacists working in Ramallah to benefit the maximum among other pharmacists. Significant differences in skills between practicing pharmacists according to the governorate where they work are expected. Habitual trends and skills differ from governorate to another. This was noticed by the researcher and declared by the pharmacists themselves. Evidence from other countries supported such differences; results from an Australian study indicated that pharmacists working in rural / remote areas reported different perceptions and roles towards pharmacy practice (Smith *et al*., 2013) Results from another study performed in Maine showed significant differences in pharmacy skills between pharmacists located in urban settings than those in rural settings (Martin *et al*., 2015).

Willingness to participate in the study acted as a double-edged sword; pharmacists who felt themselves capable of participating and answering the questions agreed to participate whereas, a noticeable number of pharmacists who studied in European countries or other countries with foreign language (other than English) refused to participate in the study using the foreign language as an excuse. Neither pharmacy education language nor country of pharmacy education rated significant differences in relation to skills and knowledge ($P > 0.05$) (table 5.4; 5.6). At this point, a question should arise; What was the PPA's role in developing pharmacists knowledge and expertise after graduation and certification to meet

Palestinian standards? Such question requires further investigation and drastic procedures to improve the current situation.

Associations between gender, age, qualifications or years of experience and skills scores were insignificant ($P > 0.05$). This opposed the results of Iranian study performed by Hnanafi while examining Good Pharmacy Practice (GPP) significant associations ($P < 0.05$) in age, qualifications and years of experience results (Hanafi, *et al*., 2013). Lack of training remains the major reason to justify such results.

Concerning knowledge scores, female respondents were significantly better than males at ($P < 0.05$) (table 5.6). This result is consistent with results of a previous study (Abu Arah, 2012). Pharmacists carrying master degree rated significantly better knowledge scores than pharmacists carrying B.Sc. in pharmacy or Pharm D degrees at ($P < 0.001$). It is clear that pharmacists who held Masters degree are self-motivated to improve their knowledge and skills and to privilege themselves from other practicing pharmacists, creating a competitive environment and maximal benefits from such degree. Significant differences resulted in knowledge scores of participants in relation with the governorate where they work. Pharmacists working in Jericho rated the best knowledge scores while pharmacists working in Nablus rated the least knowledge scores at ($P < 0.001$). The previously mentioned justifications may contribute to explain such result.

No significant differences were observed in knowledge scores in relation to the participants' age or years of experience ($P > 0.05$). This is consistent with results from a study performed by Bain about comparing pharmacists knowledge maternal-fetal medicine in Canada, Qatar and Uganda where years of experience were found insignificant in

determining knowledge scores (Bain *et al*., 2014). Lack of continuing education program to fill the knowledge gaps of practicing pharmacists is substantial to allow the maximum benefit of pharmacists capabilities and improve the health outcome and society's quality of life (WHO, 2002).

Average knowledge scores of participants were good (mean = 73.7% ± 20.0; median = 73.3%). The majority (87%) of the participants achieved more than 50% of correct scores fig (5.3). This is consistent with results of a Palestinian study performed in 2012 by Abu Arah where the scores of participants were good (mean= 69% ± 18; median = 70%) (Abu Arah, 2012).

6.2 Conclusion

Competency is a perquisite for good pharmacy practice. As the pharmacists have a significant impact on public health and improving patient's quality of life, the current practice of community pharmacists needs further improvement. The current study provides important clues for regulators and professional bodies in the West Bank to take the lead implement continuing education program for pharmacists to meet the ever changing public demand level and elevated customers' expectations about the pharmaceutical services.

In addition, several issues of concern related to pharmacy practice in West Bank were raised in this study. Absence of official updated Drug information sources, time constraints, poor communication between pharmacist and other healthcare professionals are all boundaries that hinder pharmacy practice.

6.3 Recommendations

Giving the findings of the study, some recommendations are to be made:

- For Palestinian Pharmaceutical Association:
- Introduction of continuous education program. Establishment of electronic (on-line) continuing professional development program to document activities as a requirement of annual re-licensure.
- Preparation of official data base that divides pharmacists according to the practiced profession.

- For Ministry of Health and Palestinian Pharmaceutical association:
- Establish a drug information reference, or even adopt officially active drug information websites to facilitate for pharmacists to investigate any point of concern about medications, doses, drug interaction, etc.
- Involvement of larger sample could identify pharmacists' training and educational needs in order to be addressed in continuous education program.
- Competency assessment should be nominated for each pharmacist over a five-year period that covers every aspect of their practice in both therapeutic and practice topics.

- For researchers:
- The assessment tool should be modified and implemented to all practicing pharmacists to provide a rock-solid foundation for continuous education program.

- Further studies recommended to be performed:
- Modification of the assessment tool in order to cover all areas of PPA's concern.
- Assessment of pharmacist's competencies with reference to FIP's global competency framework.
- Gap analysis of pharmacist's knowledge.

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Annex 1: Study Questionnaire (English Version)

جامعة القدس
Al-Quds University

Dear Pharmacists,

My name is Abeer Ghanayem, and I am a Masters Degree student at Al-Quds University, in Health Policies and Management. For my thesis, I am examining (Training needs assessment among Palestinian Pharmacists). Because you are a Palestinian pharmacist registered in Palestinian Pharmaceutical Association (PPA) and licensed from Palestinian Ministry of Health to practice pharmacy in West Bank, I am inviting you to participate in this study by completing the attached questionnaire.

The following questionnaire will require approximately 25 minutes to be completed. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please DO NOT include your name. If you choose to participate in this project, please answer the questions as honestly as possible. Participation is strictly voluntary and you may refuse to participate at any time.

Accepting to fill the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below.

Thank you for taking time to assist me for taking my education endeavors. The data collected will provide useful information about Palestinian pharmacists' existing competencies and their need for training and continuous education.

Sincerely,

Abeer Ghanayem

Mobile No.: 0599307595 E-mail: abeerghanayem@gmail.com

Assisstant Professor: Dr. Motasem Hamadan

Al-Quds University – AbuDis.

Section One: Demographic Data

1. Gender 1) Male 2) Female
2. Age (in Years) 1) 20-29 2) 30-39 3) 40-49 4) above 50 years
3. Educational Qualifications

   1) 2)S3) in Pharmacy 2) Pharm D

   3) Master Degree 4) Ph.4)
4. Formal language of Pharmacy education

   1) Arabic 2) English

   3) Russian 4) Others, please state_____
5. Pharmacy Practice Experience (in Years)

   1) less than 5 years 2) 4-9 3) 10-14

   4) More than 15
6. Practice Field

   1) Governmental facilities (MoH) 2) Governmental (MMS)

   3) NGO's health facilities 4) Community Pharmacy
7. Work Place Location (Governorate)

   1) Jericho 2)Bethlehem 3) Jenin 4)Hebron

   5) Ramallah 6) Salfit 7)Tubas 8) Tulkarem

   9)Jerusalem 10) Qaliqilia 11) Nablus
8. Country of Education (Please state) _____

Section Two: Training and continuous education needs

9. Your main source of information (you can choose more than option)
   1) Conferences and Workshops 2) Books and Journals
   3) Internet sources 4) Social media
   5) Sales representatives and drug leaflets 6) others (please state)_____

10. What training fields you believe pharmacists need? (you can choose more than option)
    1) Drug information 2) Pharmacotherapy of disease
    3) Pharmaceutical care process 4) Communication and counseling skills 5) Others (please state)_____

11. The following references are available at place of work (you can choose more than option) 1) Medic, Palestinian Medical Index (PMI), National Formulary
    2) Over the counter drugs list (OTC)
    3) Essential Drug List

12. Please suggest ways to improve pharmacists competency (knowledge and skills) to provide proper pharmaceutical care

_____

_____

Section Three: Pharmaceutical skills

Please put (X) on the most suitable description of your pharmaceutical practice:

No.	Item	Always	Often	Sometimes	Rarely	Never
Managerial Activity						
13	Ensure that the pharmacy is supplied with proper quantities of good quality medicines.					
14	The environment within the pharmacy reflects a professional setting both in terms of staff and facilities.					
15	Provide suitable private area with minimal distractions for patient counseling.					
16	Ensure that the pharmacy makes a good profit.					
Dispensing activity						
17	Restrict to a prescription item only during dispensing.					
18	Ensure a prescription is legally valid					
19	Assess pharmaceutical and pharmacological aspects of the dispensed medication (e.g. appropriate dosage form, dose).					
20	Explain to the patient how to take the medication and for how long and possible side effects (e.g. write administration information on the medication container).					
21	Ensure the patient has understood the information provided					
22	Consider cultural issues that may affect compliance with prescribed therapy when counseling patients about medications (e.g. contraceptives).					
Pharmaceutical care activity						
23	Participate in selection of the most appropriate medication for the patient.					
24	Explain to patients what they should expect from their medicine.					
25	Follow up patient's progress on their drug therapy (e.g. in chronic diseases).					
26	Refer patients to the doctor when necessary.					
Inter/intra-professional relationships						
27	Establish professional relationships with doctors to enable joint therapeutic management of patient.					
28	Consult other pharmacists about specific patient problems.					
29	Establish communication with other healthcare professionals or agencies to refer patients with social problems.					
Public health activities						
30	Ensure to provide general health information to patients.					
31	Provide update, unbiased information medicines information to patients and doctors.					
32	Engage in health promotion activities.					
Maintenance of competence						
33	Have access to appropriate informational services to enable efficient pharmaceutical practice.					
34	Regularly participate in continuing education programs that addresses competency improvement.					
35	Engage in self-assessment of competence and professional activities.					

Section Four: Knowledge

- Please circle the right answer:

36) Herbal Product used in motion sickness and pregnancy-associated nausea and vomiting

a. Garlic b. Ginger c. Echinacea

d. Ginseng

37) A patient allergic to penicillin group has to avoid which of these antibiotics

a. Laricid b. Tavanic c. Myrox

d. Zinex

38) Patients may still bleed severely as a result of aspirin ingestion prior to a dental or surgical procedure. The aspirin interference with normal platelet function may last as long as:

a. 12 hours b. 2 days c. 5 days

d. 7 days

39) A 67yr old man is being treated for atrial fibrillation with digoxin. If his serum digoxin levels are above therapeutic range, he is at highest risk for developing digoxin toxicity if he also develops a. hypokalemia c. hypophosphatemia b. hyponatremia

d. vitamin B12 deficiency

40) A 50-year-old woman with positive mammogram undergoes lumpectomy and a small carcinoma is removed. After this procedure she will probably receive:

a. Danazol c. Leuprolide

b. Flutamide d. Tamoxifen

41) A new indication for Liraglutide (Saxenda®) is:

a. Obesity b. Epilepsy c. Rheumatoid Arthritis

d. AIDS

42) Why has the FDA established a rule that sunscreens can no longer be labeled with SPFs above 30?

a. Higher SPF sunscreens cause more skin irritation than products with SPFs of 30 or less.
b. Protection does not increase linearly with SPF. SPFs above 30 offer a minimal increase in protection.
c. Sunscreens with SPFs above 30 are not water resistant.
d. Sales of sunscreens with SPFs of 30 or less were unfairly lower than sales of higher SPF products.

43) Which of the following is the best choice for the treatment of nasal congestion in children?

a. a nasal topical agent such as tetrahydralozine

b. an oral decongestant such as phenylephrine
c. an oral antihistamine such as chlorpheniramine
d. saline nose drops followed by gentle suction with a nasal bulb

44) Why should individuals with eating disorders use extreme caution with the use of supplements marketed as "ephedra-free"?
a. "ephedra-free" supplements cause rapid and extreme weight gain
b. patients with eating disorders are at high risk for muscle cramps
c. patients with eating disorders are at high risk for adverse cardiovascular effects
d. many "ephedra-free" supplements have been shown to be cancerous in animals

45) Which of the patients are most at risk of suffering from an adverse drug reaction?
a. An 8 month year old infant receiving a prescription for an antibiotic.
b. A 22 year old patient with asthma receiving prescriptions for inhalers to relieve and prevent their asthma.
c. A 48 year old patient who has hypertension and receives a prescription for an ACE inhibitor.
d. A 68 year old patient who has edema receiving a prescription for a diuretic.

قوانين وزارة الصحة الفلسطينية ونقابة الصيادلة الفلسطينيين

الرجاء وضع علامة (X) عند الاجابة الصحيحة:

الرقم	البند	نعم	لا
.46	يجوز حقن الإبر في الصيدلية من قبل الصيدلي المسؤول فقط		
.47	مستودع الأدوية مخصص لبيع الأدوية بالجملة والمفرق لأي كان		
.48	في حال مرض الصيدلي أو تغيبه لأي سبب كان عليه تعيين صيدلي مرخص ينوب عنه في إدارة المؤسسة لمدة أقصاها سنة واحدة		
.49	يلغى الترخيص الممنوح من الوزارة في حال تم بيع الصيدلية دون علم وموافقة الوزارة		
.50	يجوز أن يكون تاريخ انتهاء الدواء مختوما بالحبر أو مطبوعا من قبل الشركة المصنعة		

Thank you

Annex 2: Study Questionnaire (Arabic Version)

جامعة القدس
Al-Quds University

كلية الدراسات العليا

كلية الصحة العامة

أخي الصيدلاني الكريم / أختي الصيدلانية الكريمة ...

تحية طيبة وبعد...

تقوم الباحثة الصيدلانية **عبير غنايم** بإجراء دراسة بعنوان **"تقييم احتياجات الصيادلة بالضفة الغربية للتدريب والتعليم المستمر"** وذلك استكمالاً لمتطلبات الحصول على درجة الماجستير في جامعة القدس / كلية الصحة العامة / مسار السياسات والإدارة الصحية. وعليه فقد تم إعداد هذا الاستبيان بهدف جمع البيانات.

راجين منكم الإجابة بصراحة وموضوعية مع التأكيد بأن هذه المعلومات تتسم بالسرية التامة ولن يتم استخدامها إلا لأغراض البحث العلمي وذلك بهدف التحسين والتطوير وأخذ القرارات المبنية على الحقائق.

لأي أسئلة تتعلق بالاستبيان أو الدراسة الرجاء الاتصال على الرقم الوارد أدناه.

شاكرين لكم حسن تعاونكم

مع خالص التقدير...

عبير غنايم

جوال رقم: 0599307595

البريد الإلكتروني: abeerghanayem@gmail.com

أ.مشارك : د. معتصم حمدان (المشرف على الرسالة)

جامعة القدس – أبو ديس.

القسم الأول: البيانات الشخصية (الديموغرافية) :

1. الجنس 1) ذكر 2) أنثى
2. العمر(بالسنوات)

1) 20- 29 2) 30 - 39 3) 40 - 49 4) 50 فأكثر

3. المؤهلات العلمية

1) بكالوريوس (صيدلة) 2) Pharm D

3) ماجستير 4) درجة الدكتوراه

4. اللغة التي درست بها الصيدلة

1) اللغة الإنجليزية 2) اللغة العربية.

3) اللغة الروسية 4) أخرى (يرجى ذكرها) _____

5. عدد سنوات الخبرة في ممارسة مهنة الصيدلة

1) أقل من 5 سنوات 2) 5 - 9 3) 10 - 14 4) 15 فأكثر

6. جهة العمل

1) جهة حكومية (وزارة الصحة) 2) جهة حكومية (الخدمات الطبية العسكرية) 3) جهة غير حكومية (أونروا أو منظمات غير حكومية أخرى) 4) قطاع خاص

7. مكان العمل (المحافظة)

1) أريحا 2) بيت لحم 3) جنين 4) الخليل 5) رام الله

6) سلفيت 7) طوباس 8) طولكرم 9) القدس 10) قلقيلية

11) نابلس

8. البلد التي تخرجت منها (الرجاء تحديدها) _____

القسم الثاني: احتياجات التدريب والتعليم المستمر

9. المصدر الأساسي للمعلومات الخاصة بك (يمكن اختيار أكثر من احتمال)
   1) المؤتمرات والمحاضرات العلمية 2) الكتب والمجلات العلمية
   3) مصادر من الانترنت 4) مواقع التواصل الاجتماعي
   5) مندوبي الدعاية والنشرة المرفقة بالدواء 6) مصادر أخرى (الرجاء ذكرها)_____

10. ما هي المواضيع التي تعتقد أن الصيادلة بحاجة إلى التدرب عليها ؟ (يمكن اختيار أكثر من احتمال)

   1) المعلومات الدوائية 2) العلاج الدوائي للأمراض
   3) عملية الرعاية الصيدلانية 4) مهارات الاتصال والتواصل مع الآخرين
   5) أخرى (الرجاء ذكرها) _____

11. تتوفر المراجع التالية لدي في الصيدلية (يمكن اختيار أكثر من اجابة)
   1) Medic، الفهرس الطبي الفلسطيني (PMI)، دستور الأدوية ، وما إلى ذلك
   2) قائمة بالأدوية التي تصرف دون وصفة طبية (OTC)
   3) قائمة الأدوية الأساسية في فلسطين (Essential Drug List)

12. برأيك، كيف يمكن زيادة كفاءة الصيدلي لتقديم خدمة صيدلانية صحية متميزة من حيث المعرفة الدوائية والمهارات الشخصية؟

_____

_____

القسم الثالث: المهارات الصيدلانية

يرجى وضع اشارة (X) على أفضل ما يصف أداءك للمهارات الصيدلانية المذكورة

الرقم	البند	دائما	غالبا	احيانا	نادرا	أبدا
	النشاط الإداري					
13.	أتأكد أن الصيدلية مزودة بكميات مناسبة من الأدوية.					
14.	أعمل على أن تعكس الصيدلية بيئة مهنية (من حيث الموظفين أو المرافق)					
15.	أعمل على توفير منطقة خاصة لتقديم المشورة للمرضى.					
16.	أسعى أن تحقق الصيدلية نسبة ربح جيدة					
	عملية صرف الأدوية					
17.	ألتزم بصرف الأدوية المذكورة بالوصفة الطبية					
18.	أتأكد أن الوصفة الطبية لا تحتوي أي مخالفة					
19.	أتحقق من ملائمة الدواء للمريض قبل الصرف (مثلا الجرعة الدوائية المناسبة، عدم وجود آثار جانبية للدواء قد تؤثر بشكل سلبي على المريض.. الخ)					
20.	أقوم بشرح كيفية استخدام الدواء للمريض مع التأكيد على أي تعليمات ضرورية لمصلحة المريض (مثلا كتابة تعليمات استخدام الدواء قبل صرفه)					
21.	أتأكد من أن المريض قد فهم التعليمات التي قدمتها له					
22.	أضع بعين الاعتبار العادات والمعتقدات المجتمعية عند تقديم المشورة للمرضى حول الأدوية (مثلا وسائل تنظيم الأسرة)					
	الرعاية الدوائية					
23.	أشارك في اختيار الدواء الأنسب للمريض.					
24.	أهتم بتوضيح النتائج المتوقعة الدواء الموصوفة للمريض					
25.	أعمل على متابعة حالة المريض بعد صرفه للدواء (مثلا حالات الأمراض المزمنة)					
26.	أقوم بتحويل المريض إلى الطبيب عند الضرورة.					
	العلاقات المهنية الداخلية والخارجية					
27.	أعمل على بناء علاقة مهنية طيبة مع الأطباء لتفعيل إدارة علاجية مشتركة للمرضى.					
28.	أتشاور مع زملائي الصيادلة عن مشاكل معينة تواجه المرضى.					
29.	أعمل على تأسيس قنوات تواصل مع مختلف مزودي الرعاية الصحية لإحالة المرضى الذين يعانون من مشاكل اجتماعية .					
	نشاطات الصحة العامة					
30.	أحرص على أن أكون فاعلا في توفير المعلومات الصحية العامة للمرضى.					
31.	أحرص على تقديم أحدث المعلومات عن الأدوية للمرضى والأطباء.					
32.	أقوم بالمشاركة بالأنشطة المتعلقة بنشر الوعي الصحي					
	الحفاظ على الكفاءة الصيدلانية					
33.	أحرص على التزود بالخدمات الإعلامية (الانترنت) لتحسين مستوى الرعاية الصيدلانية التي أقدمها للمريض (مثلا البحث عن آخر المستجدات بما يتعلق بالأدوية)					
34.	أشارك بانتظام في برامج التعليم المستمر التي تهتم بتحسين الكفاءة الصيدلانية.					
35.	أقوم بعمل تقييم ذاتي دوري لمهاراتي الصيدلانية الصحية					

القسم الرابع: المعرفة الصيدلانية

يرجى وضع دائرة حول رمز الاجابة الصحيح:

46) Herbal Product used in motion sickness and pregnancy-associated nausea and vomiting

a. Garlic b. Ginger c. Echinacea

d. Ginseng

47) A patient allergic to penicillin group has to avoid which of these antibiotics

a. Laricid b. Tavanic c. Myrox

d. Zinex

48) Patients may still bleed severely as a result of aspirin ingestion prior to a dental or surgical procedure. The aspirin interference with normal platelet function may last as long as:

a. 12 hours b. 2 days c. 5 days

d. 7 days

49) A 67yr old man is being treated for atrial fibrillation with digoxin. If his serum digoxin levels are above therapeutic range, he is at highest risk for developing digoxin toxicity if he also develops a. hypokalemia c. hypophosphatemia b. hyponatremia

d. vitamin B12 deficiency

50) A 50-year-old woman with positive mammogram undergoes lumpectomy and a small carcinoma is removed. After this procedure she will probably receive:

a. Danazol c. Leuprolide

b. Flutamide d. Tamoxifen

51) A new indication for Liraglutide (Saxenda®) is:

a. Obesity b. Epilepsy c. Rheumatoid Arthritis

d. AIDS

52) Why has the FDA established a rule that sunscreens can no longer be labeled with SPFs above 30?

a. Higher SPF sunscreens cause more skin irritation than products with SPFs of 30 or less.
b. Protection does not increase linearly with SPF. SPFs above 30 offer a minimal increase in protection.
c. Sunscreens with SPFs above 30 are not water resistant.
d. Sales of sunscreens with SPFs of 30 or less were unfairly lower than sales of higher SPF products.

53) Which of the following is the best choice for the treatment of nasal congestion in children?

a. a nasal topical agent such as tetrahydralozine
b. an oral decongestant such as phenylephrine

c. an oral antihistamine such as chlorpheniramine

d. saline nose drops followed by gentle suction with a nasal bulb

54) Why should individuals with eating disorders use extreme caution with the use of supplements marketed as "ephedra-free"?

a. "ephedra-free" supplements cause rapid and extreme weight gain

b. patients with eating disorders are at high risk for muscle cramps

c. patients with eating disorders are at high risk for adverse cardiovascular effects

d. many "ephedra-free" supplements have been shown to be cancerous in animals

55) Which of the patients are most at risk of suffering from an adverse drug reaction?

a. An 8 month year old infant receiving a prescription for an antibiotic.

b. A 22 year old patient with asthma receiving prescriptions for inhalers to relieve and prevent their asthma.

c. A 48 year old patient who has hypertension and receives a prescription for an ACE inhibitor.

d. A 68 year old patient who has edema receiving a prescription for a diuretic.

قوانين وزارة الصحة الفلسطينية ونقابة الصيادلة الفلسطينيين

الرجاء وضع علامة (X) عند الاجابة الصحيحة:

الرقم	البند	نعم	لا
.46	يجوز حقن الإبر في الصيدلية من قبل الصيدلي المسؤول فقط		
.47	مستودع الأدوية مخصص لبيع الأدوية بالجملة والمفرق لأي كان		
.48	في حال مرض الصيدلي أو تغيبه لأي سبب كان عليه تعيين صيدلي مرخص ينوب عنه في إدارة المؤسسة لمدة أقصاها سنة واحدة		
.49	يلغى الترخيص الممنوح من الوزارة في حال تم بيع الصيدلية دون علم وموافقة الوزارة		
.50	يجوز أن يكون تاريخ انتهاء الدواء مختوما بالحبر أو مطبوعا من قبل الشركة المصنعة		

شكرا لتعاونكم

Annex 3: Approval Letters

Annex 3: Approval Letters

بسم الله الرحمن الرحيم

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2015/9/14
الرقم: ك ص ع/ 44/2015

حضرة الدكتورة أمل أبو عوض المحترم
القائم بأعمال مدير عام التعليم الصحي/ وزارة الصحة الفلسطينية

الموضوع: مساعدة الطالبة عبير علي محمد غنايم

تحية طيبة وبعد،،

تقوم الطالبة عبير علي محمد غنايم برنامج ماجستير السياسات والإدارة الصحية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث الرسالة بعنوان:

"تقييم احتياجات الصيادلة بالضفة بالضفة الغربية للتدريب والتعليم المستمر"

وهي بحاجة إلى توزيع استبانه الدراسة على الصيادلة المرخصين والمزاولين لمهنة الصيدلة في مؤسسات وزارة الصحة (المستشفيات ومراكز الرعاية الأولية)، نرجو من حضرتكم تسهيل مهمة الطالبة والسماح لها توزيع الاستبانة على عينة الدراسة، علماً بان الدراسة ستكون لأغراض البحث العلمي فقط.

مرفق طيه أهداف واستبانه الدراسة.

وتفضلوا بقبول فائق الاحترام،،

كلية الصحة العامة
Faculty of Public Health

عميد كلية الصحة العامة

نسخة: الملف

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State of Palestine
Ministry of Health - Nablus
General Directorate of Education in Health

دولة فلسطين
وزارة الصحة- نابلس
الإدارة العامة للتعليم الصحي

الرقم: ٢٠١٥/ع.ت/١٦٤
التاريخ: ١٤/١٢/٢٠١٥

Ref.: .....
Date: .....

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،
الأخ مدير عام الادارة العامة للرعاية الصحية الأولية المحترم،،،
الأخ مدير مجمع فلسطين الطبي المحترم،،،

تحية وإحترام،،

الموضوع: تسهيل مهمة طلاب

تماشياً مع سياسة وزارة الصحة المتعلقة بتعزيز التعاون مع الجامعات والمؤسسات الأكاديمية بإتاحة فرص التدريب أمام الطلبة والخريجين والباحثين في المؤسسات الوطنية وإسهاماً في تنمية قدراتهم.

يرجى تسهيل مهمة الطالبة:عبير غنايم- ماجستير السياسات والادارة الصحية- جامعة القدس، في عمل بحث الرسالة التخرج بعنوان: **تقييم احتياجات الصيادلة بالضفة الغربية للتعليم المستمر**"، لذا يرجى تسهيل مهمة الطالبة في توزيع وتعبئة استبانة الدراسة من قبل الصيادلة العاملين في جميع مستشفيات الضفة الغربية وجميع مديريات مديريات الصحة والمجمع الطبي، علما بأنه سيتم الالتزام بمعايير البحث العلمي والحفاظ على سرية المعلومات.

مع التحية،،

فلسطين وزارة الصحة
د. أمل أبو رحمة
مدير عام التعليم الصحي

نسخة: عميد كلية الصحة العامة المحترم/ جامعة القدس

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Annex 4: List of Experts for questionnaire validity

Content Validity	
Asma Imam Ph.D.	School of Public Health – Al-Quds University
Hussein Hallak Ph.D.	College of Pharmacy – Al-Quds University
Tarif Ashour Ph.D.	Directorate General of Pharmacy - Palestine
Mustafa Qawasmi MSc Applied Statistice	Ministry of Education - Palestine
Mohammad Doufish B.Sc. Pharmacy	Palestine Pharmaceutical Association head board
Face Validity	
Rania Shahin, MSc Pharmaceutical Analysis	General directorate of Pharmacy – Directorate General of Pharmacy
Ayman Khammash, BSc Pharmacy	Chairman of Palestine Pharmaceutical Association
Tahani Fattouh, MSc Clinical Pharmacy	Ministry of Health- Palestine
Mohammad Attili, MScof Public Health	Ministry of Health
Reda Silmi, MSc of Public Health	Ministry of Health